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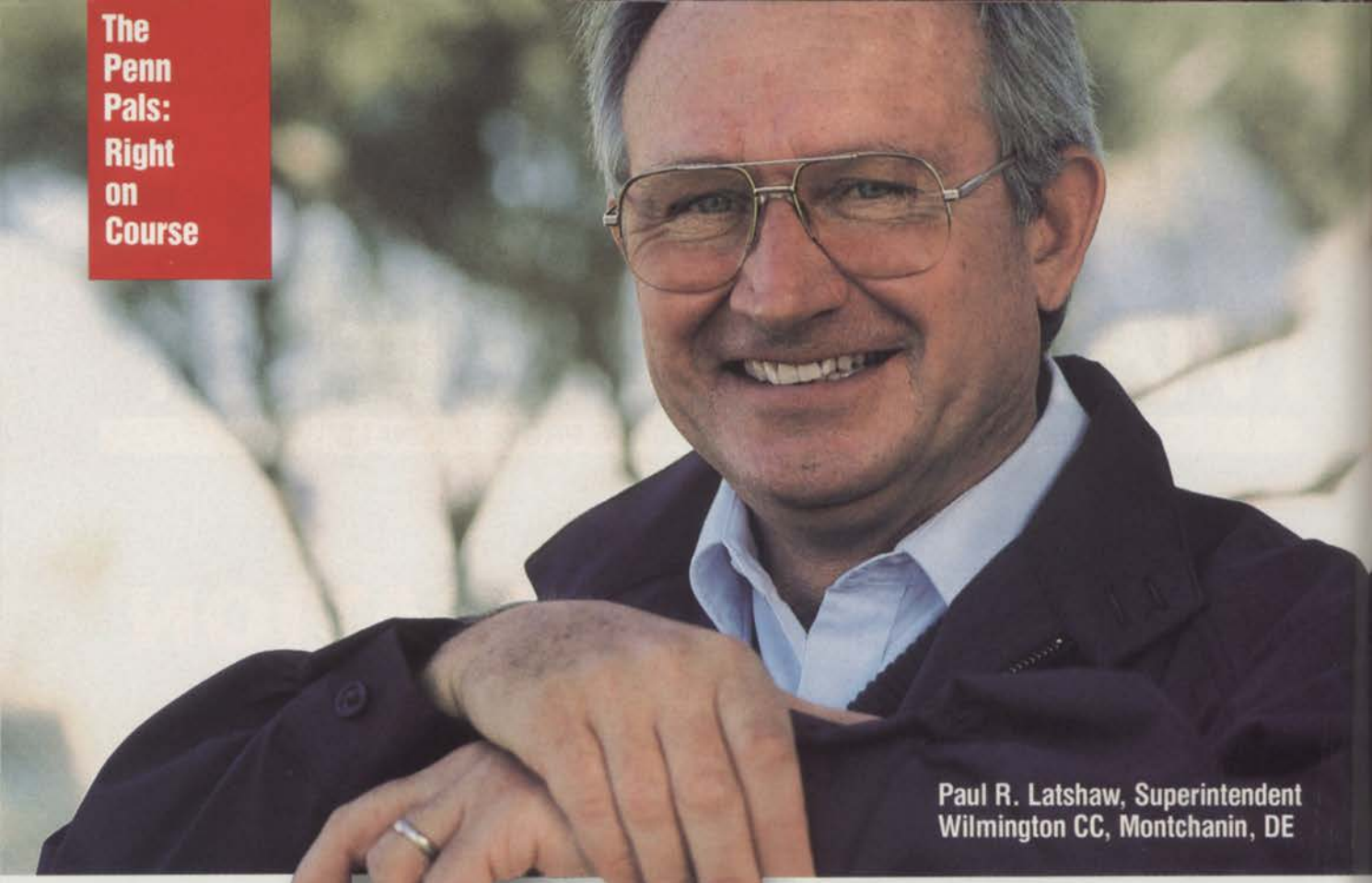

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MAY 1991, VOLUME 30, NUMBER 5

LANDSCAPE MANAGEMENT®

On the cover: Back to the classroom. By Bob Barlow, HW/R Productions.

24 COVER STORY: THE MARK OF PROFESSIONALISM
by Jerry Roche. It's all here in black and white: if you're training employees, you're taking a step toward being a leader of the '90s; if you're not, you can say a quick good-bye to any aspirations you might have.

32 COOL SEASON INSECT CONTROL GUIDE
by Harry Niemczyk, Ph.D. Biological insect control products have had limited success. Industry and university researchers continue their quest: to find the best agents and application techniques.

38 CONTROLLING DISEASE IN LANDSCAPE PLANTS
by John Hartman, Ph.D. Some disease-causing microbes are always present, waiting for the right moment to strike. Others can be controlled with cultural and chemical management techniques.

44 FERTILIZERS: HOMOGENIZED VS. NATURAL ORGANICS
by Art Mondak and Jim Spindler. You have a choice between homogenized or natural organic fertilizers. Two industry experts describe the merits of each.

DEPARTMENTS

4 As I See It . . .
8 Green Industry News
16 Events
18 News Briefs
48 Jobtalk
50 Quickie Quiz
53 Products
56 Classified
59 Ad Index
60 Problem Management

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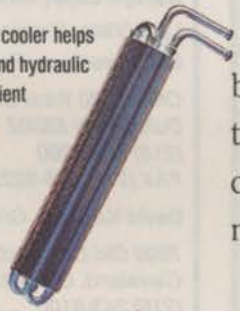

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AS I SEE IT...

Capitol city: all talk. Any action?

The U.S. Capitol building is an impressive and imposing sight. A visitor to D.C. can use it as a point of reference; indeed, the city's geographic center is located in the rotunda.

Less impressive is what actually gets done in the Capitol and the surrounding office buildings. It's the world's power center, yet—save for the architecture and bargain cab fares—the place is strikingly common.

And people who work there are prone to say silly things. The Professional Lawn Care Association of America (PLCAA) and National Pest Control Association had their "Day on the Hill" in March. Robert Dole told us the gulf war success could "change dramatically what happens in Congress," given Commander Bush's high approval rating. "The important thing is," said Dole, "is that if Congress says no, then he can go to the American people." So what programs will the people now support Bush on that they wouldn't have supported him on before? Regardless of his popularity, the elderly will still have an opinion on medical care, parents will still have an opinion on child care, and nobody will want more taxes.

Next, Victor Kimm, the Environmental Protection Agency's deputy assistant administrator for pesticides and toxic substances, had his say. He called pesticide regulation "something that changes over time," which couldn't be more contrary to the whole point of why we have laws in the first place.

Kimm (and others like him) also has a way of conveniently blaming "the public" and its "sensitivity to a variety of pesticide issues." How refreshing it'd be to hear a government official say that the reason for it all is to keep people on the government payroll.

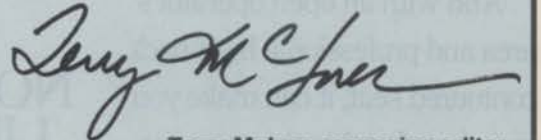
The most popular buzzword in this whole pesticide legislation mess is, "sensitivity." In the past few years, more rights have been lost in the name of "sensitivity" than ever before. In this case, the sensitivity is to irrational fears fueled by misinformation.

Now it's come down to the wire. The green industry's position is clear. Self-policing works, but if federal and state laws must exist, let them be practical.

The PLCAA wants mandated certification and training for *all* commercial applicators, including in-house workers.

FIFRA works as a national guideline. Local jurisdiction—if given the green light by the Supreme Court—will muddy the water and put companies out of business; good companies, too, not just fly-by-nights.

Whose voice will congress hear? At this point, we can only hope for the best.



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GREEN INDUSTRY NEWS

MAY 1991, VOLUME 30, NUMBER 5

LANDSCAPE MANAGEMENT

LEGISLATION

Supreme Court will review case of applicator vs. city

The continuing battle as local governments try to preempt federal authority will reach a head this spring when the highest court in the land listens to arguments.

WASHINGTON — A case heard by the U.S. Supreme Court on April 24 will affect the green industry. The case was to decide if local governments are permitted to restrict pesticide and other chemical applications, or if state or federal laws override local ordinances.

The high court was to hear an appeal stemming from Casey, Wisc., and the state's Office of Public Intervenor.

With local governments nationwide often enacting stricter pesticide laws than those contained in the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), the Casey suit is seen by many to be precedent-setting. Conflicting court rulings from state supreme courts and federal appeals courts have also clouded the issue.

In "Wisconsin Public Intervenor vs. Mortier," the Supreme Court could uphold or reverse a March, 1991 Wisconsin State Supreme Court ruling which in a 4-3 vote upheld two previous lower court rulings that local pesticide regulations are pre-empted by federal and state laws.

In 1981, the City of Casey passed a resolution prohibiting pesticide and herbicide use on public lands and along roadways in the adjacent township. In 1983, a similar law regarding herbicides was included a public hearing clause.

A July, 1984 local resolution modifies procedures for herbicide application on public lands or private lands which the public might use. It also specifies aerial application procedures.

In the specific case before the court, local landowner Ralph Mortier applied to the township to spray 20 acres to prepare the site for Christmas tree plantings. Casey officials denied Mortier's permit, but allowed him to spray 10 acres by hand.

Mortier challenges the local ordinance which was updated in 1985 to include all pesticides and fungicides not included in the original law.

Mortier has been supported by the Wisconsin Forestry/Rights-of-Way/Turf Coalition. The state's Office of Public Intervenor represents the city.

In May, 1988, a U.S. Circuit Court of Appeals voided the Casey regulations, ruling federal and state laws pre-empt local ordinances. That decision was upheld by the Wisconsin Supreme Court in March, 1990.

Russel R. Weisensel, executive director of the Forestry/Rights-of-Way/Turf Coalition, says that allowing such local controls makes it impossible for pesticide applicators to operate.

"If special local laws are needed, they should be part of an overall state plan," says Weisensel.

The coalition is a division of the Wisconsin Agri-Business Council, Inc.

"We are also concerned what this means for agriculture as well," says Weisensel, arguing a single farm tract could stretch over two or more local jurisdictions with differing application laws.

Weisensel: local controls would make it impossible to operate.

But Tom Dawson, the intervenor in the case, says the central issue is "whether local governments will continue to exercise their traditional role of protecting their areas locally.

"The floodgates are not about to open and even if that (were true), the answer is not pre-emptive regulations. It is uniformity (in regulations) that everyone can be familiar and comfortable with," says Dawson.

—Jack Simonds□

These Pennsylvania lawn care operators were among those who took the time to visit Washington, D.C. for "Day on the Hill." From left to right are Larry Ellmaker; Neal DeAngelo; Mike Kravitsky, III; Doug Loon, assistant to Sen. Arlen Specter; Mark Phipps; David White of Coron Corp.; and Ken Clemmer.

LEGISLATION

LCOs lobby in D.C. for standardization

WASHINGTON — The Professional Lawn Care Association of America (PLCAA) came here in March to make a stand. On its agenda was national certification and training of pesticide applicators, and affirming jurisdiction of the government's major pesticide-use law.

About 200 lawn care and pest control operators and product manufacturers were here to lobby for responsible pesticide regulations, during what could be the green industry's most important legislative year ever.

PLCAA believes certification and training amendments are keys to the re-authorization of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). That re-authorization is expected later this summer.

In *Casey v. Wisconsin*, the Supreme Court will judge whether or not local pesticide regulation is preempted by FIFRA (see related story, page 8).

"If local governments are allowed to regulate pesticides," said Robert Rosenberg, director of government affairs for the National Pest Control Association, "and the onus of congressional intent is lifted, it's our belief that there will be thousands of local regulations, and they will not be consistent."

Certification and training amendments are improvements the PLCAA has long wanted to see in FIFRA.

"We know how important certification and training are for members," said Tom Delaney, PLCAA's director of government affairs. "We feel the federal government has to come along with some of the safety requirements that we (PLCAA) have.

"They have to beef up their programs...not only for the technicians. Anybody that's commercially applying a pesticide for hire needs to be certified."

Both sides of the issue are winning supporters. According to Delaney, 11 states and the U.S. Attorney General have filed *amicus curiae* ("friend of the court") briefs, stating their support for local power: Alabama, Hawaii, Illinois, Kansas, Maine, Michigan, Missouri, Nevada, Pennsylvania, Utah and Vermont.

States on record as favoring FIFRA laws governing locally are Oregon, Arkansas, Iowa and Louisiana.

At presstime, California was reportedly also ready to fall in line as being opposed to increased local power. Delaney urges LCOs to encourage legislators in those states to file briefs in favor of FIFRA.

If the high court decides to support local pesticide regulations, there is not much the industry can do. If FIFRA is allowed to continue as local law, LCOs can spend more time running their businesses and less time in court.

—*Terry McIver*□

EPA official envisions stricter laws in future

WASHINGTON — Victor Kimm has told members of two pesticide groups that there exists an "increased responsiveness" by lawmakers to pass stricter laws governing pesticide use.

Kimm is an EPA deputy assistant administrator for pesticides and toxic substances. He spoke to members of the Professional Lawn Care Association of America and the National Pest Control Association during an annual "Day on the Hill" presentation here.

"In many instances," said Kimm, "such legislation is more stringent than federal requirements.

"I think that change is a function of and related to the attitude of the citizens." Kimm added that he has seen "increased sensitivity, questioning and concerns" over pesticide-related issues.

"Most legislation in the environmental area allows for increased stringency at the state and local level," said Kimm. "We're likely to see that pattern continue."

Kimm also promised that industry would see more testing of pesticides over the next decade, as all pesticides are put through a re-certification process.

Kimm urged LCOs to watch the reregistration process carefully, "because you want to be sure these are open processes."

The EPA, according to Kimm, wants to keep restricted use pesticides "in the hands of the professionals, and is interested in stronger certification and training requirements, areas which the PLCAA and other state lawn care associations have been making strides."

—*Terry McIver*□

PRODUCTS

Atrazine worry prompts recall

WILMINGTON, Del. — Concern over possible atrazine content has caused Du Pont to announce an immediate stop sale and recall of its Benlate 50DF, Benlate 1991 DF and Tersan 1991 DF fungicides sold in the U.S.

Du Pont advises all dealers and distributors to cease sale of these products immediately, and to notify any Benlate and Tersan customers of the recall. Du Pont says any grower, nurseryman, golf course superintendent, horticulturist, university tester or applicator who has these products should return them to the point of purchase and obtain credit.

According to Du Pont, the level of atrazine that may be contained in Benlate and Tersan poses no human health or food safety problems, but could result in injury to plants.

Sale of the products will be withheld until they have been determined to be atrazine-free.

For more information, contact Du Pont at (800) 441-7515. □

Dr. Roger Yeary (left) of ChemLawn and Dr. Douglas Linz of the University of Cincinnati report on ChemLawn study.

PESTICIDES

ChemLawn's applicators prove healthy

COLUMBUS, Ohio — The ChemLawn Corp. released a study March 7 which shows its applicators are a healthy group.

The study, begun in

continued on page 12

STUDY *from page 11*

1987, assessed the health of 100 specialists who apply pesticides and fertilizers as a part of their jobs. Those studied had been working with pesticides for at least nine years.

"The study answers many concerns that people have about the health effects of long-term exposure to landscape care products that are properly handled and applied," says Dr. Roger Yeary, ChemLawn's vice president of Health, Safety and Environmental Affairs.

"The results speak for themselves. The study showed no long-term adverse health effects attributable to the specialists' work with chemicals."

The findings were released by Dr. Douglas Linz of the Occupational and Environmental Medicine Group of the University of Cincinnati Medical Center, where the study was conducted. Linz had participated in the study.

Workers were reviewed through a standardized occupational work history developed by an industrial hygienist. Physical exams and laboratory evaluations were also performed.

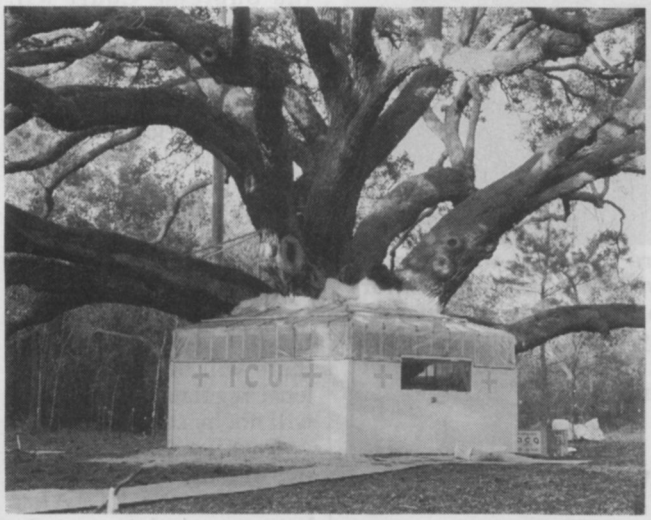
Sought were known or potential adverse health effects from exposure to insecticides, herbicides, fungicides and fertilizers.

The study also showed the group exhibited minor work-related ill effects.

ChemLawn asked for a follow-up examination on 26 specialists who exhibited nerve conduction velocity test results that were initially difficult to interpret because of a lack of a control group.

A later comparison with Cincinnati municipal sewer district workers, completed in 1990, does not show association between job exposure to pesticides and nerve conduction measurements.

ChemLawn will not release detailed information until the Occupational and Environmental Medicine Group publishes its findings in a scientific journal. □



An "intensive care unit" was set up around the tree (left) to control temperature and humidity. The actual wound created by a chainsaw is shown above.

TREES

Experts out on limb to save jumbo tree

MAGNOLIA SPRINGS, Ala. — New concepts in tree care are the keys to saving a 500-year-old jumbo Southern live oak.

Last fall, the 27-foot circumference trunk was girdled by a chainsaw-toting vandal in the wake of a property dispute. The tree (*Quercus Virginiana*), which is 65 feet tall with a crown spread of 150 feet, faces a life-threatening battle as summer heat approaches.

Initial grafting efforts consisted of 138 small bridge grafts, while supplemental grafts amounted to 65 large bridge grafts. In addition, 32 smaller offspring trees were grafted on the main plant.

"We were trying to graft in the winter—which is unheard of," reports Stan Revis, a Crestview, Fla. forester who is working to save the tree. Revis says that 30 university experts have been solicited for their opinions.

"We're having to take what makes sense and try it," he says.

The grafts are an example. "The bark on this tree is four inches thick. Nobody's tried to graft with bark that thick before."

Pencil-sized live oak twigs were used. Like straws, the scions were lined up with the cambium and inserted within the damaged area to allow the flow of water and nutrients.

A highly fibrous peat product supplied by the Canadian Sphagnum Peat Moss Association was placed around the grafts as a bandage.

Thirty two trees are grafted below and above the stricken area. The potted offspring are bent over with one side grafted below the wound and the other side attached above the gash. Other potted saplings may be grafted onto overhanging limbs.

Scrub oaks under the canopy were removed to avoid robbing the tree of additional nutrients.

"We took a radar sounding to see where the root structure was," recalls Stan Foote of the Committee to Save the Tree. They extended about 40 feet past the crown, and a six-inch layer of peat moss and mulch was placed around the tree.

A tree that's near death will secrete a hormone causing it to produce more seeds to reproduce itself. Therefore, this jumbo tree is likely to have a bumper crop of acorns this year. But acorns can rob a tree of about 15 percent of its nutrients, so Revis would like to limit the tree's acorn production.

He's counting on using water to wet the pollen and soak it right out of the sky. "We have a sprinkler system set up on top of the tree, and when the pollen starts flying we're going to run the sprinkler system 10 minutes every hour for 24 hours a day," he says.

The sprinkler system is a 65-foot telephone pole that's leaned up the tree. Attached is a firehose-like setup that's fed by a 140-foot well.

"The sprinkler head is a way to cool the tree in the heat of the summer," Foote adds.

Also, the heat pump in the 'intensive care unit' will be replaced by an air conditioner to keep the tree cool. "We've got to get the tree through the summer or it's not going to live," Revis cautions.

—James E. Guyette□

ENVIRONMENT

Ice storms blister East and Midwest

FAIRPORT, N.Y. and BATTLEFIELD, Ind. — Severe ice storms last month ravaged central Indiana and then felled about 100 mature oak and beech trees at Oak Hills Country Club in New York.

Oak Hill, considered one of the top 100 U.S. golf courses and site of the 1989, 1968 and 1956 U.S. Open championships, was expected to open the season on schedule April 18. About 65 of the mature trees fell in wooded areas the public does not visit.

continued on page 14

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Many trees destroyed at Oak Hill were in out-of-bounds areas; nonetheless, a massive clean-up ensued.

ICE *from page 12*

Still, the damage claimed two trees at the course's notable "Hill of Fame" where one tree dedicated to comedian Bob Hope and another honoring Arnold Palmer, Gary Player and Jack Nicklaus were lost.

The damage severity at first astounded Hahn, but outside help was hired for clean-up and pruning, and normal seasonal staffers were reassigned.

"Mother Nature took a long time to make Oak Hill beautiful. She did a lot of damage in a short period of time," Hahn says.

"It was kind of ironic. In its own way, at first the sight was beautiful: the area had kind of a crystal look. But then there was the damage's ugliness."

As of mid-March, Hahn's crews were "moving along pretty well" as greens, tees and fairways were largely unharmed. Volunteers were also assisting in clearing away debris.

Hahn is no stranger to nature's fickleness. In 1989, just prior to the U.S. Open, Oak Hill was drenched by three inches of rain. And in 1983, the course iced up overnight.

"This was the worst as far as devastation," Hahn notes. "But we'll get it cleaned up and go on from there. You can't dwell on it."

The Indiana ice storm hit a 19-county area in the north central part of the state, taking out "everything smaller than my wrist" says Daniel Skinner, a Fort Wayne landscaper who drove through Battlefield, Ind. afterward.

Areas in the storm's wake have been declared federal disaster areas by Pres. George Bush. Six died and 43 were injured.

"It was as if the trees had been topped out. Limbs were down everywhere," recalls Skinner.

Heavier trees "looked like they'd been cleanly cut," he says. Softer poplars appeared more sheared.

Skinner's Landscape Services clients largely were unaffected by the storm, but Skinner says his company followed the general rule of not touching plants until ice melts.

Steve Goodwin agrees. He is a supervisor, arborist and sales representative for Bartlett Tree, Ft. Wayne.

Goodwin says 99 percent of the trees in the area were likely affected by the ice. Originally about 10 crews from his company were sent into the region around Battlefield, but within two weeks crews were reduced to five or six.

His biggest concern was for homeowners who don't attend to tree repair because damage wasn't immediately visible. Ice-related tree damage, says Goodwin, can lead to disease and insect infestation.

Goodwin says few stands of trees were left unaffected and ice coatings of an inch or more glazed hardwooods like oak, hickory and hard maple, along with softer trees.

—Jack Simonds□

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EVENTS

MAY

15: North Carolina Turf and Landscape Field Day, N.C. State University Turf Field Center, Raleigh, N.C. Contact: C.H. Peacock, or R.H. White, Box 7620, NCSU, Raleigh, NC 27695-7620; (919) 737-7615.

18-19: Certification testing for landscape contractors, Valencia Community College, Orlando, Fla. Contact: Florida Nursery Growers Assn., 5401 Kirkman Rd., Suite 650, Orlando, FL 32819; (407) 345-8137.

18-21: Intl. Society of Arboriculture, Western Chapter Conference and Trade Show, Modesto, Calif. Contact: Allen Lagarbo, 801 11th St., Modesto, CA 95353; (209) 577-5344.

JUNE

5-6: IPM Workshop, "Incorporating Biological Controls". Contact: The Ball Institute, (708) 231-3600.

6-7: Florida Ornamental Growers Association Seminar and Trade Show, Altamonte Springs, Fla. Contact: Barbara C. Poole, exec. secretary, P.O. Box 7560, Sun City, FL 33586-7560; (904) 463-7666.

12: Lofts Field Day, Lofts Research Farm, Chimney Rock Road, Martinsville, N.J. Contact: Marie Pompei, (908) 560-1590.

19: Lofts Field Day, Lofts Research Farm, Wilmington, Ohio. Contact: David Goodwin, (513) 382-1127.

GOLF

NGF issues critique of 'Forbes' article

JUPITER, Fla. — National Golf Foundation President/CEO Joseph Beditz has responded to a *Forbes* magazine article which was critical of NGF growth figures.

According to Beditz, *Forbes*'s Dec. 24, 1990 article, "Extrapolation Madness," erred in its comments on golf industry sales, golf development failures and the growth of demand for the game. According to Beditz:

- No more than 10 to 20 golf courses a year go out of business. That's 0.1 percent.
- Rounds played—not number of golfers—is the primary indicator of demand.
- During the 1980s, the golf industry enjoyed one of its most prosperous decades ever, with sales on average increasing 10 percent per year.

"We have to guard against those who will misinterpret normal adjustments in our industry and its growth cycles," says Beditz.

The *New York Times* followed up on the *Forbes* article. A *Times* article noted that, though the need remains in the U.S. for new golf courses, construction of real estate developments that feature golf courses has slowed. According to the *Times*, "some golf course developers fear that they are going through the same cycle as hotel and office developers—a rush to build followed by a glut and a crash."

The NGF (which predicts 150 to 200 new courses this year) believes that municipalities must pick up the slack by building more public courses, says NGF director of communications Bill Birbaum.

The primary purpose of the NGF, headquartered here, is to encourage the growth of golf in the United States. □

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NEWS BRIEFS

LANDSCAPERS INC.-LUDED... Three landscaping companies were listed on *Inc.* magazine's list of the 500 fastest-growing privately-held companies in the U.S. At No. 254 was Arrowhead Landscaping and Maintenance of Phoenix, Ariz. It was founded in 1983 by **Benjamin Snyder** and **Jeff Meyer**. The R. Glass Landscape Company of Roselle, Ill., was listed as No. 373. It was founded in 1981 by **Richard Glass**. And Clean Cut of Austin, Texas, was No. 449. It was founded in 1985 by **Rex Gore** and **Dennis Dautel**.

BRITS ON THE MOVE... There have been two significant changes at *Groundsman* magazine, the publication of Britain's Institute of Groundsmanship. **Bill Mills**, its esteemed editor since 1981, is stepping down. In an editorial, the IoG called Mills "a self-effacing man who does the rounds of exhibitions, raising his trilby hat to the ladies...a courtesy so rare today that it has become his trademark." In addition, the magazine's offices move to Suite 52, Charing Cross Road, London WC2H 0DH.

FREE MOWER...Steven Malikowski, superintendent at Cape May (N.J.) National Golf Club, won the free use of a Ransomes Greens 3000 mower for one year. Malikowski's name was randomly chosen in a drawing sponsored by Ransomes at the International Golf Course Conference and Show in Las Vegas.

TRAINING TIPS... Our cover story this month is on training. One of the best resources for landscape and horticulture training videos is California Poly-San Luis Obispo, which has a wide variety of videos available for purchase. For a free 20-page catalog, call Vocational Education Productions at (800) 235-4146 from 8 a.m. to 5 p.m. Pacific time.

INDUSTRY SUPPORT WORKS... Iowa's sign-posting regulations for professional pesticide applicators will not be altered this year. The decision came after a February hearing attended by LCOs, golf course superintendents and pest control operators. According to the Iowa Professional Lawn Care Association, written and oral presentations by industry representatives influenced the Department of Agriculture and Land Stewardship to leave the rules as they are, at least for this season.

THE TRUE ABUSERS... Golf course superintendents are working with the EPA on TV ads during major golf tournaments this season. The ads, directed toward homeowner "do-it-yourselfers," suggest pesticide alternatives, and give the phone number of the National Pesticide Telecommunications Networks hotline: (800) 858-7378. The Professional Lawn Care Association of America helped the EPA identify lawn products they might be asked about.

RESEARCH FINDINGS... According to **Dr. Peter Landschoot,** research at Cornell University has shown that some organic amendments suppress dollar spot and brown patch diseases when applied as a topdressing to bentgrass putting greens. Similar results have been obtained by researchers from Michigan State University and the University of Rhode Island for the suppression of necrotic ring spot. "Although we do not understand the exact mechanisms involved," says Penn State's Landschoot, "there is some evidence to suggest that these products stimulate populations of resident antagonists to levels that will suppress some turf diseases." They may also aid in disease control by providing additional nitrogen to the plant.

J. Michael Poellot: superintendents must keep courses environmentally safe, use environmentally safe products.

GOLF

Golf courses can add to environment

LAS VEGAS — Golf courses and the environment go hand-in-hand, according to J. Michael Poellot, who spoke on the subject at the International Golf Course Conference and Show here.

"With proper design, construction and maintenance, golf courses cannot only coexist in our increasingly fragile environment, but they can enhance it," said Poellot, president of JMP Golf Design Group in Saratoga, Calif. "Golf courses actually help preserve our precious open space.

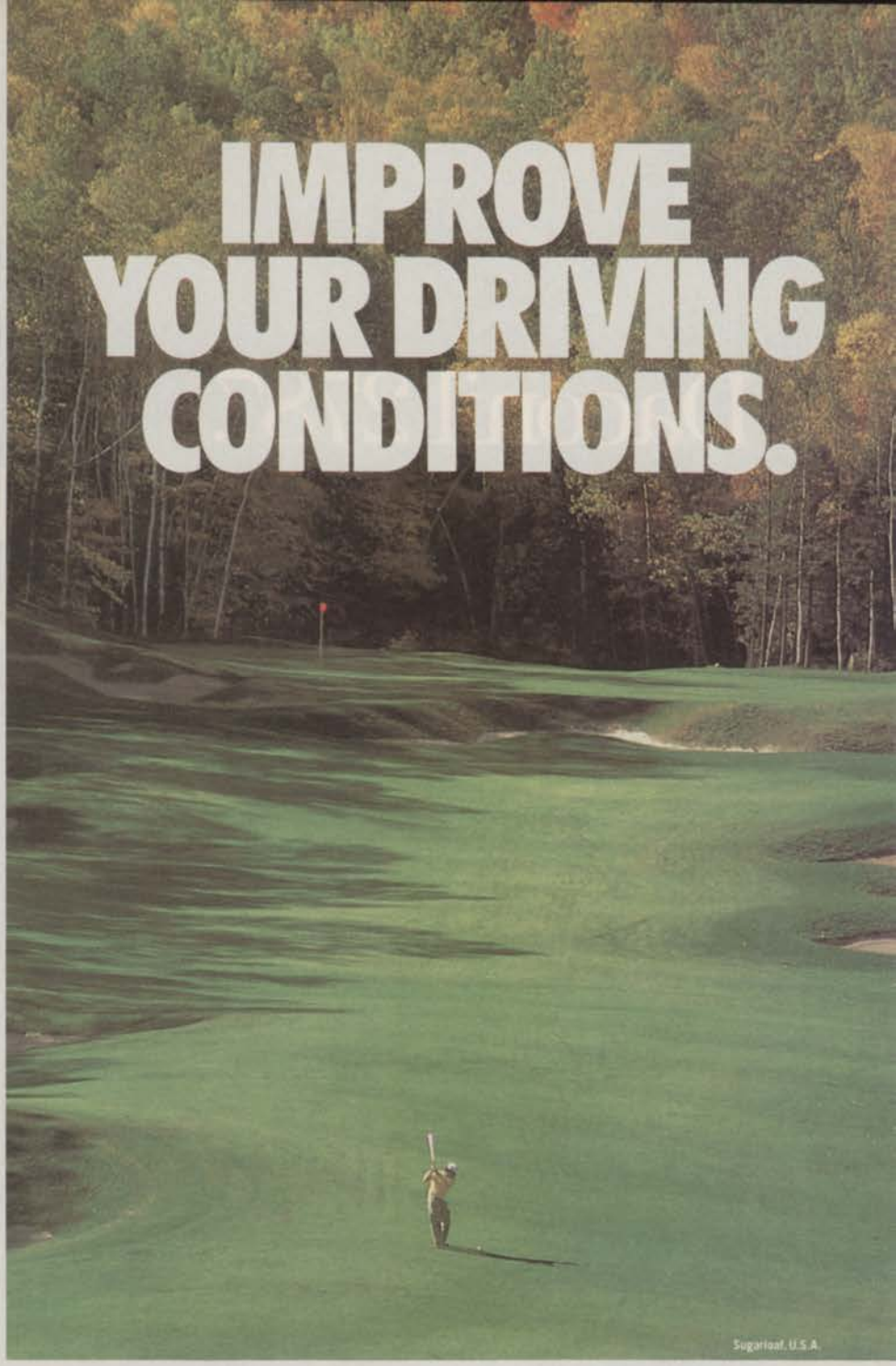
"For every 150-acre golf course that turns the area into a lush rolling landscape of trees, turfgrass and wildflowers, there are 5,000 acres of land being paved in concrete or asphalt."

Poellot pointed to the environmentally safe use of pesticides as being one of the primary issues facing the golf industry.

"New technologies and state-of-the-art methods of design, construction and maintenance have made it possible to insure that almost no chemicals either leach into the groundwater or run off into surface water supplies," he noted.

"In addition to pesticide application, golf course superintendents play a key role in insuring that golf courses are environmentally safe. Without a program that maintains the course to the highest environmental standards, design and construction efforts will be useless."

Peollot concludes his speech by calling for industry standards that will become recognized worldwide as a "certification of acceptable environmentally-sensitive design, construction and maintenance." He said, "It's our responsibility to make golf available and affordable for future generations. And that means coexisting with the environment." □



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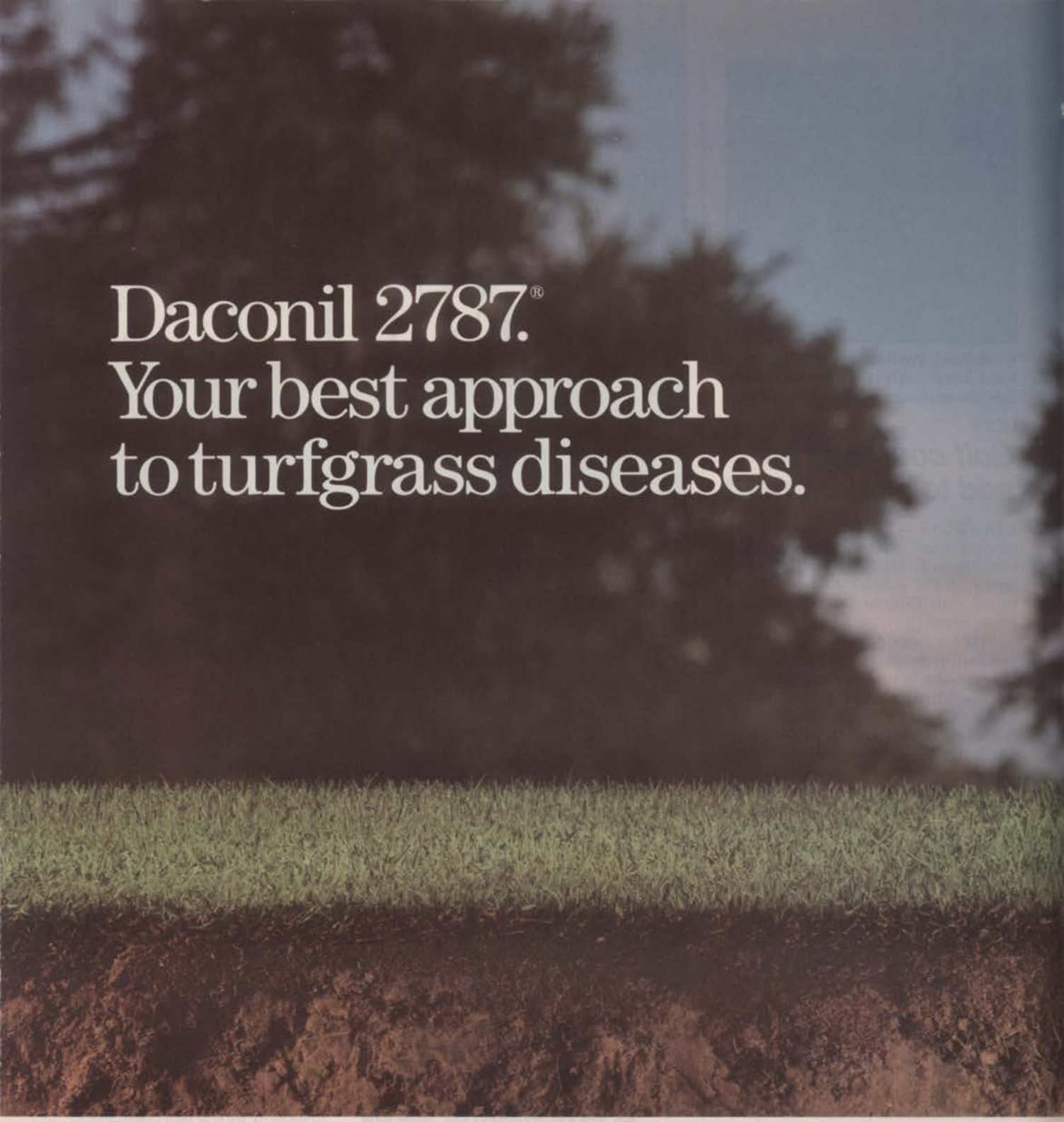

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'TOP 50' REVISITED

The following companies responded to a LANDSCAPE MANAGEMENT mail survey to determine the nation's "Top 50" landscape contracting companies, by size. The companies on this chart, which was accidentally omitted from our April issue, requested that we keep their sales figures confidential. All qualify for our April "Top 50" listing:

Companies are ranked in descending order of 1990 gross sales:

- **Tropics North**, Princeton, Fla.
- **Lied's Nursery**, Sussex, Wisc.
- **Master Gardener Nursery**, Delray Beach, Fla.
- **Post Properties, Inc.**, Atlanta, Ga.
- **The Greenery, Inc.**, Hilton Head, S.C.
- **Davis Landscape, Inc.**, Raleigh, N.C.
- **Minor's, Inc.**, Ft. Worth, Texas
- **Green Masters Industries**, Plymouth, Minn.
- **The Landmarks Group**, Atlanta, Ga.
- **R.M. Landscape, Inc.**, Hilton, N.Y.
- **The Caretakers, Inc.**, Eagan, Minn.
- **Adsit Landscape & Design**, Memphis, Tenn.
- **Landscapers, Inc.**, Bloomington, Minn.
- **Environ Associates**, Atlanta, Ga.
- **Acres Ent.**, Wauconda, Ill.
- **DeSantis Landscapes, Inc.**, Salem, Ore.
- **Da Rocha Landscaping & Nursery, Inc.**, Rehoboth, Mass.
- **McCullough & Sons**, Baltimore, Md.
- **Vandehey Landscape Contractors, Inc.**, Portland, Ore.
- **Innerflora**, Des Moines, Iowa
- **Wayside Landscape Services**, Swannanoa, N.C.
- **Meder Landscape, Inc.**, Metairie, La.
- **B & J Sprinkling Service, Inc.**, Denver, Colo.

—*Terry McIver*□

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Model 12

Model 182

Model 818

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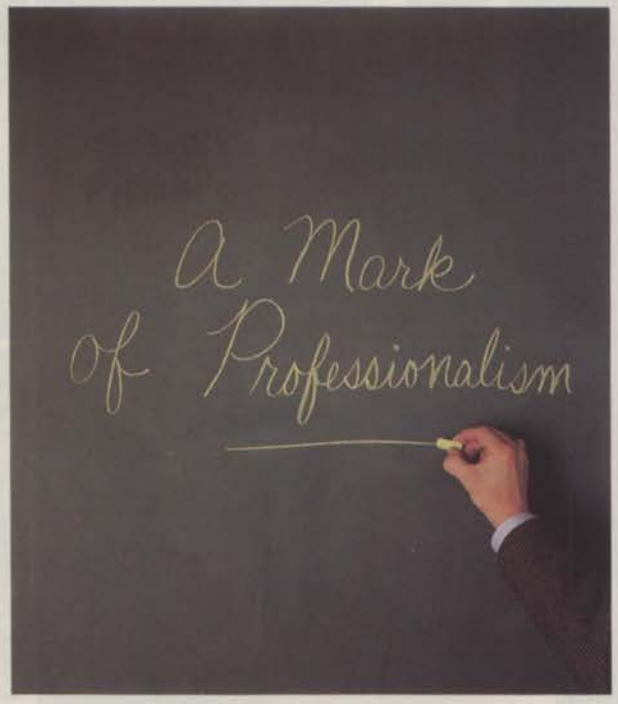
EMPLOYEE EDUCATION



It's all here in black and white: if you're training employees, you're taking a step toward being a leader of the '90s; if you're not, you can say a quick good-bye to any aspirations you might have.

by Jerry Roche, editor-in-chief

For some organizations, it's a day in the field with an experienced employee. For others, it's an intensive week-long classroom and practical experience.

But for any green industry outfit worth its salt, training is becoming more than important: it's becoming essential.

If your company or golf course doesn't have a training program in place, it's time. No—it's past time. And if you've already got a basic training program, maybe it's time to refine and expand it.

The Davey Tree Company has two employee training programs by which all others are measured. And for good reason: it first offered intensive programs as early as 1908.

Ward Peterson: trainees stay at Davey

Intense duty

The Davey Institute of Tree Sciences (DITS) is a four-week program during which valued employees are pulled from the field, transported to Kent, Ohio, housed and fed. For those four weeks, more than 40 employees think tree care for 24 hours a day. Graduates can obtain up to six semester-hours of credit toward a horticulture degree at Kent State University.

"DITS is as complete a program as you'll find anywhere on practical tree care," notes Ward Peterson, Davey's manager of human resources.

The Davey training notebook, four inches thick, could well be titled "Everything You Always Wanted to Know About Tree Care...But Were Afraid to Ask."

The DITS program is for foremen who've been with the company at least two years and have been recommended by their superiors.

"We envision ourselves as the best in the industry," says Ken Celmer, Davey's vice president of operations. "There's a percentage of people in DITS who will advance through sales to assistant managers, and managers can go to the production end or the sales end. But we don't run these schools to make salesmen—we need professional foremen."

Davey also runs a one-week DIHS (for horticultural training) that is not as in-depth but provides a wider-based technical education.

Teachers in the area of business management—including customer service—are drawn from Kent State faculty members. Staff to teach electrical hazards comes from Ohio Edison power company. Other DITS and DIHS teachers are members of Davey's technical resources department—Ph.Ds all.

Ken Celmer: need professional foremen

"We hold on to DITS graduates quite well, too," observes Peterson. "They get the feeling that we're really taking care of them."

Starting out

On the other end of the educational spectrum is Rood Landscaping, a 40-year-old award-winning company that is just now formalizing its employee training programs.

"We don't want to be the largest, we want to be the best," says Roy Rood. "Training should be part of the everyday schedule for a business that wants to be progressive. And we involve everybody in the training process."

Rood, 72, helped at a recent three-day training seminar organized by landscape manager Tom Aeillo. Foremen and laborers were divided into groups and rotated through seven

DAVEY INSTITUTE OF TREE SCIENCES

Training Schedule, Week One

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8 am	Welcome & introductions	Corporate tours	Tree insects	Tree diseases	Soils	Tree insects
9 am	Davey history	Tech center tours	↓	↓	↓	↓
10 am	Tree physiology	Tree physiology	Tree identification	Soils	Arbor lab	Tree diseases
11 am	↓	↓	Tree diseases	↓	↓	↓
Noon	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1 pm	Tree insects	Tree diseases	Open forum	Tree identification	Tree insects	
2 pm	↓	↓	Tree physiology	Arbor lab	↓	
3 pm	Tree identification	Tree identification	Arbor lab	Pesticide awareness	Tree identification	Open
4 pm	Study skills	Arbor lab	↓	↓	Program evaluation	
5 pm	Welcome dinner	Tree diseases	Open	Open	Open	
6 pm	↓	↓				

Davey's DITS student/employees receive practical classroom training in rope tying.

Roy Rood (second from left) was a faculty member in Rood Landscaping's new program.

Tom Aiello (left) and Dan Russell helped formulate Rood Landscaping's new training program.

ROOD LANDSCAPE CO., Inc. TRAINING MANUAL

Contents

Introduction
Guidelines
Definitions

1. Personnel management
2. Plant identification
3. Plan reading
4. Planting procedures
5. Equipment operation
   - skid-steer loaders
   - chain saws
   - sod cutters
   - rototillers
6. Root pruning & transplanting
7. Pruning
8. Staking
9. Edging board installation
10. Grading, mulching, sod installation
11. Irrigation
12. Record-keeping

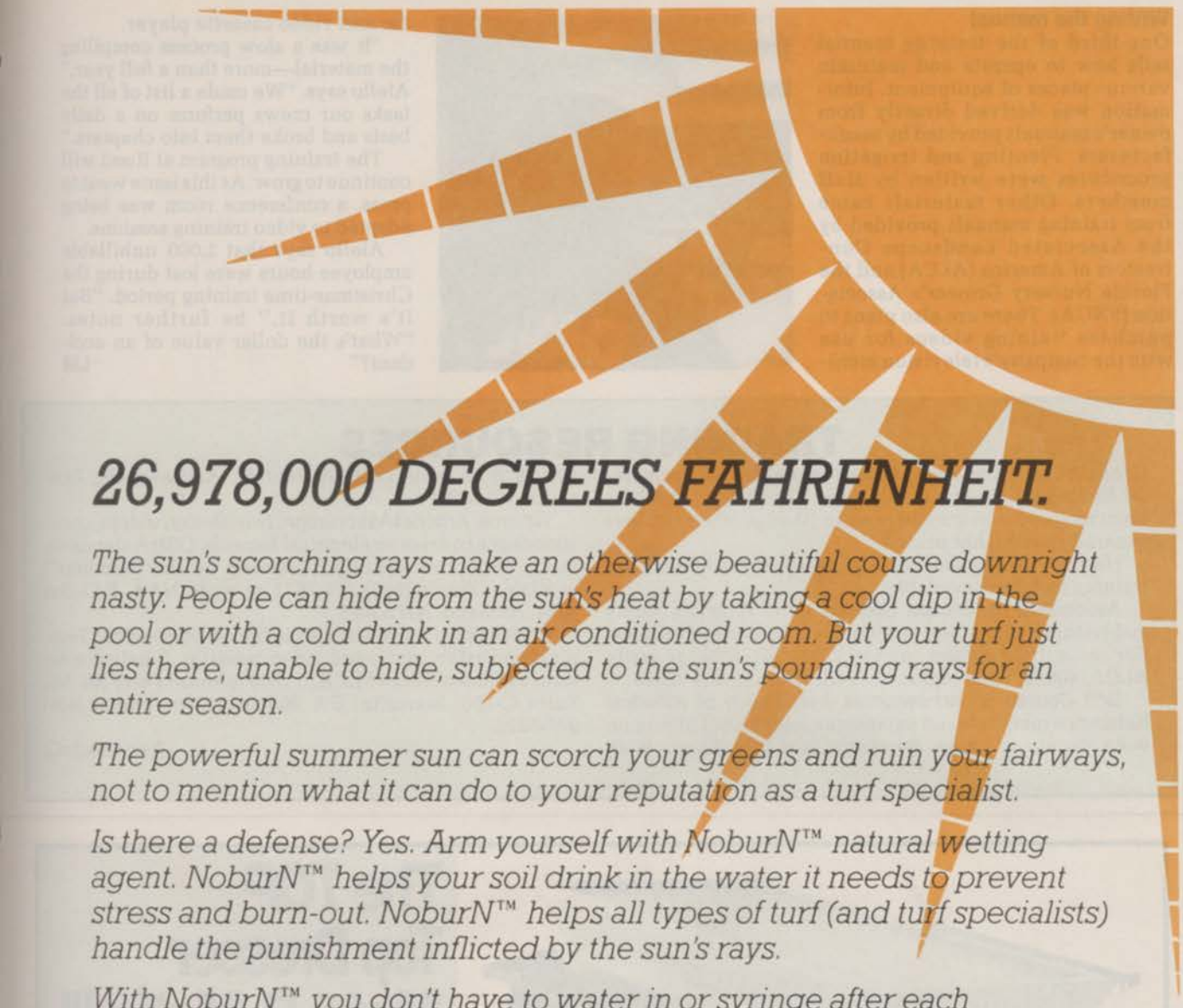
training stations.

"We paid $15,000 to $20,000 to train all of our guys," notes maintenance manager Dan Russell. "We want this industry to know we're professional from day one—no matter how much time it takes. I think it'll nip a lot of problems in the bud."

This spring, foremen took a hands-on test, for which they had to grade out at 70 percent or better on a series of 12 landscape problems. When they pass all 12 problems they become a "certified foreman" with an accompanying pay raise. A similar program for technicians will begin in 1992.

"We started training in the landscape division at Christmas," notes Aeillo. "People just don't want you around between Christmas and New Year's, so it's non-productive time anyway."

A training manual was developed with assistance from all sales and supervisory, and Roy Rood himself. "While we maintained a watchful eye over our production for quality control, we were aware that our sudden growth caused inconsistencies among the various crews," says Aiello.



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The sun's scorching rays make an otherwise beautiful course downright nasty. People can hide from the sun's heat by taking a cool dip in the pool or with a cold drink in an air conditioned room. But your turf just lies there, unable to hide, subjected to the sun's pounding rays for an entire season.

The powerful summer sun can scorch your greens and ruin your fairways, not to mention what it can do to your reputation as a turf specialist.

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With NoburN™ you don't have to water in or syringe after each application. Since there is no phytotoxicity, you just wait until your irrigation comes on at night to water in. Besides having great looking turf—you save valuable time and money.

NoburN™ is not a quick fix product. If flocculates soil particles, loosening compacted soils for long term relief. Your heavily traveled tees and greens will benefit from the improvement in percolation.

Since NoburN™ is 90% organic, it is biodegradable in the soil and there is no problem with residue build-up. Come September when all is said and done, NoburN™ will make sure there was a lot more done than said.

So this summer don't let the heat get the better of you: beat the heat with NoburN™.

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Headline = sun's interior temperature according to Encyclopedia Britannica (1974 edit.)

Circle No. 110 on Reader Inquiry Card

Writing the manual

One-third of the training manual tells how to operate and maintain various pieces of equipment. Information was derived directly from owner's manuals provided by manufacturers. Planting and irrigation procedures were written by staff members. Other materials came from training manuals provided by the Associated Landscape Contractors of America (ALCA) and the Florida Nursery Grower's Association (FNGA). There are also plans to purchase training videos for use with the company's television monitor and video cassette player.

"It was a slow process compiling the material—more than a full year," Aiello says. "We made a list of all the tasks our crews perform on a daily basis and broke them into chapters."

The training program at Rood will continue to grow. As this issue went to press, a conference room was being adapted to video training sessions.

Aiello says that 1,000 unbillable employee hours were lost during the Christmas-time training period. "But it's worth it," he further notes. "What's the dollar value of an accident?" **LM**

TRAINING RESOURCES

Green industry trade associations are wonderful resources for finding training materials. Most have them for sale to members and non-members alike (though non-members generally pay higher prices).

Here is a list of some industry organizations which have training materials available:

Associated Landscape Contractors of America: Safety and training videos and publications. Brochure available. For more information, phone (703) 241-4004 or write ALCA, 405 N. Washington St., Falls Church, VA 22046.

Golf Course Superintendents Association of America: Reference materials and extensive audio-visual library on wide variety of topics. Brochure available. Phone (800) 472-7878 or write GCSAA, 1617 St. Andrews Dr., Lawrence, KS 66047.

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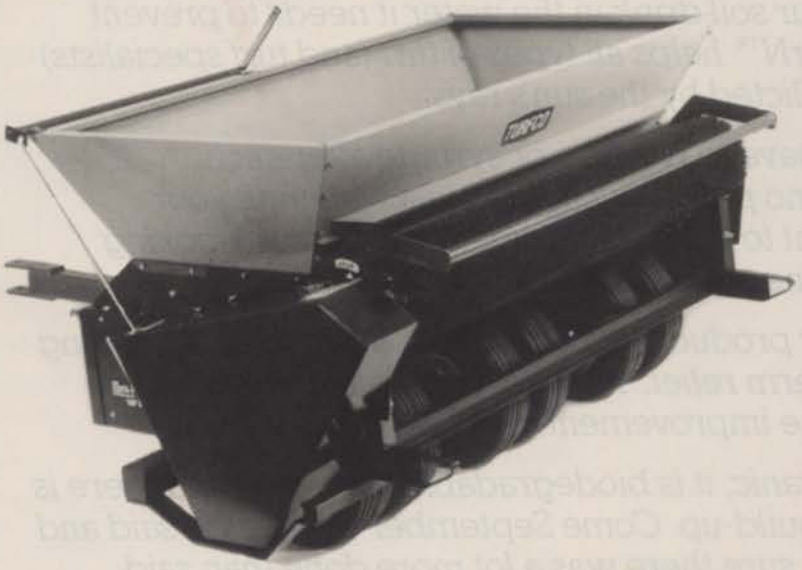
—Jerry Roche□



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The black cutworm is a leaf feeding insect. These types of insects are more vulnerable to biological control products such as parasitic nematodes than subsurface inhabiting pests like grubs.

Biological insect control products have had limited success. Industry and university researchers continue their quest to find the best agents and application techniques.

by Harry Niemczyk, Ph.D., Ohio State University

Insecticides still remain the most effective means of controlling established populations of insects causing damage to turf. Interest in—and expectations for—biological means of controlling cool season insect pests of turfgrasses is at an all-time high.

Naturally occurring biological agents, such as parasites, predators, entomogenous (insect parasitic) nematodes, fungi and bacteria, remain important suppressors of insect populations (both beneficial and harmful) in turfgrasses. However, with the exception of the development of endophyte-enhanced perennial ryegrasses and turf-type tall fescues, and chinchbug resistant varieties of St. Augustine grass, the artificial introduction of cultured biological agents, such as nematodes and parasitic bacteria, has met with limited success, at best.

Despite the general impression that these agents are effective, the collective scientific data obtained to date simply does not support this conclusion.

The current strong desire for effective biological controls for turfgrass insect pests has led to expectations that far exceed those realistically achievable at this time.

The search continues

Researchers in industry and at state universities are not discouraged by the limited success of biological control agents. In fact, research in this area has intensified in all quarters. Major chemical companies are interested in and have obtained development and other rights to certain biological agents. This is an encouraging sign. Both industry and university researchers are working on new application tehnologies for more precise placement of biological control agents in order to bypass some of the natural bariers to effectiveness, such as desiccation, ultraviolet light and the thatch

The TOP 10 Cool Season Insect Targets

Pest	Spring April-May	Summer June-August	Fall-early winter Sept.-Dec.
1 Chinch bugs	In northern zones, chinch bugs overwinter as adults in thatch or sheltered sites near buildings. They can become active during warm days in March. Infestations occur in zoysia, Kentucky bluegrass and fine fescues. As the warm days of spring approach, movement of chinch bugs increases rapidly. Generally, egg laying begins the first week of May, but can begin in mid-April if spring arrives early. Generally, application of insecticides to prevent infestations of chinch bugs should be completed by the first week in May. Applications may begin as early as the last week of March. Such applications must be made before significant numbers of eggs are laid. This time may vary as much as a week or more, depending on spring weather.	Chinch bug eggs continue to hatch into June. Bright red nymphs with a center white band appear. The number of chinch bugs increases rapidly in June. Their populations peak in July and August, when northern lawns can receive severe damage. This damage is often masked by summer dormancy of turf caused by drought. Hot, dry conditions are ideal for chinch bugs. During August, the nymphs molt into adults that mate and lay eggs, thus producing a second generation. Some northern areas have only one generation per year.	In the northern U.S., the second generation of chinch bug is at peak numbers in September. Nymphs complete their development to adults in late October. Most chinch bugs overwinter in the turf, but some move to protected areas before winter. Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus (*Beauveria app.*) usually provide sufficient control.
2 Billbugs	Billbugs overwinter as adults in thatch or sheltered sites near buildings. They become active during warm days in March. Infestations also occur in zoysia, Kentucky bluegrass and fine fescues. Generally, application of insecticides to prevent infestations of billbugs should be completed by the first week in May. Applications may begin as early as the last week of March. Such applications must be made before significant numbers of eggs are laid. This time may vary as much as a week or more, depending on spring weather.	Bluegrass billbug larvae feed on grass stems during June and move to the plant crowns, roots and rhizomes during July. This feeding pattern causes brown spots that frequently resemble the symptoms of some fungus diseases. Symptoms are also masked when the turf is dormant from drought. The larvae usually move deeper into the soil under dry soil conditions. During late July and August, the larvae burrow deeper into the soil to pupate and transform into adults.	During September, billbug adults that developed from summer larvae are often seen on sidewalks, driveways or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges or near foundations and overwinter. Many, if not most, overwinter in turf. In some areas a partial second generation may occur. Larvae of this generation have been known to cause visible damage in September and October.
3 Sod webworms	Overwintered larvae of the sod webworm begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas frequently have probe holes from starlings feeding on larvae. Moth flights begin in May in northern areas. Young larvae are usually present about two weeks after the spring moth flight peaks, so treatment of young larvae can be done in May in some areas.	Damage from sod webworm larvae occurs occasionally in most of the cool-season turf region. Injury is more common in Midwestern states, usually in July and August. Older sod fields or areas with heavy thatch are good candidates for infestation. There are generally one or two generations per year, depending on the species.	Northern sod webworm larvae are small and cause little if any damage in the fall. Late in the fall the larvae construct a cocoon-like shelter in which they overwinter. The most common sod webworm species overwinter as larvae in the thatch or upper inch of soil. Feeding does not resume until hibernation (dipause) is broken by early spring warmth.
4 Cutworms	Moths of cutworms blown north on the winds aloft begin laying eggs on golf course greens and other turf areas in the spring. These eggs hatch, producing larvae that feed on grass blades during the night. The black cutworm is the most common species on cool-season turf. While visible damage is uncommon on home lawns, damage can be significant on golf course greens in late May.	Cutworm larvae continue to cause damage to golf course greens from June through August. These larvae pupate in the soil or thatch and emerge as moths that lay eggs for additional generations.	Damage to golf course greens may be seen in September, but is not common. This insect does not overwinter in any known stage in the northern states.
5 Ants	Various species occur in turf. Colonies located three or more feet under the surface. Nest cleaning and general activity resumes in April. New mounds begin to appear in late April and May. A single colony may have may surface openings, each with a mound of soil.	Nuisance mounding and foraging continues through the summer, paticularly in areas of sandy soils. Colony queens produce a steady flow of more ants. Mounds of soil two to three inches tall are replaced rapidly, causing damage to mowing equipment as well as shading out turf to cause small dead spots.	Mounding, foraging and production of more ants continues until late fall. Some species culture aphids in their colonies by placing them on turf roots. The ants feed on the sweet fluid produced by the aphids.
6 Greenbug aphid	The only stage of the greenbug known to overwinter in northern states is the egg. Shiny black eggs deposited in the previous fall may be found adhering to grass blades, fallen tree leaves or other debris. Greenbug eggs begin hatching as early as April, but significant infestations do not develop until later in the year. Greenbugs are also brought into the region from the south on upper air winds. Aphid numbers are too low to detect in lawns at this time.	Damaging populations of greenbugs can occur from June-August. Populations and incidents of damage frequently vary from area to area, even within the same city. Symptoms of injury include turf under the dripline of trees and in open areas having a burnt orange color. When symptoms are apparent, numerous ashids (40or more) may be seen on a single grass blade. Close examination of damaged turf is necessary because the aphids are small. If left untreated, a heavy infestation can kill the turf.	Damage to golf course greens may be seen in September, but is not common. This insect does not overwinter in any known stage in the northern states.

Source: Dr. Niemczyk

The TOP 10 Cool Season Insect Targets

Pest	Spring April-May	Summer June-August	Fall-early winter Sept.-Dec.
7 Winter grain mite	Damage from this mite is often first noted in March or April, when turf areas are receiving spring fertilizer applications. Winter grain mites are identifiable by eight bright red legs and a dark body. By late May, the mites will have laid their eggs and died. Mites do not appear again until the eggs hatch in October.	Mite is in the egg stage and not active at this time.	Spring laid eggs begin hatching in October. Occasionally, damage may be seen in December.
8 Clover mite	Incidents of visible damage to home lawns are often seen in April in Ohio cities and Denver. Usually a nuisance pest in and around homes, the clover mite occurs in large numbers (5,000 per square foot) across entire lawns and on turf next to building foundations. Symptoms of injury were the same as the winter grain mite. Turf next to foundations may be killed. The clover mite has a slightly pink body and eight pale-colored legs. The first pair of legs is extremely long and protrude well out in front of the mite. The absence of bright red legs distinguishes the clover mite from the winter grain mite.	Adult mites lay eggs. Occasionally, some eggs hatch, giving rise to a summer gerneration.	Eggs hatch. Adults feed in turfgrasses, next to buiilding foundations and often enter buildings in large numbers. Turf next to foundations may be killed. Treatment of turf prevents damage.
9 Grubs	Overwintered grubs return to the surface and begin feeding on turfgrass roots in April. Increased activity and damage from birds, moles, skunks and raccoons foraging on grubs can also be expected and continues through May. Treatment should be delayed uhtil the grubs are in the top one inch of soil. Irrigation or rain-fall should follow such applications to aid in moving the insecticides to the target grub as soon as possible following application. Although milky disease products for control of Japanese beetle grubs may be applied any time there is no frost in the soil, spring is a good time for such applications. The soil is open, and frequent rains move the disease spores into the soil and thatch. Milky disease products are primarily effective against Japanese beetle larvae. Ineffectivity against other species is low. Incidents of large grub infestations (June bug larvae, for example) have been increasing in cool-season areas. Locations of such infestations should be identified because reinfestation is likely every three years. Eggs are laid in May and June. Therefore, treatment should be made in late summer, early fall of that year or the next spring while larvae are small. Later applications against full-grown larvae have given inadequate control in past studies.	By June, grubs have stopped feeding and are in the pupal stage, three to four inches in the soil. Beginning mid-June and continuing through mid-July, the adults of various species emerge and burrow into the soil to lay eggs. Hatching and appearance of young larvae occur during July and August. Extreme heat and drought during the summer may cause some grubs to move deepeer in the soil. Under such conditions, irrigation several hours before treatment, and a thorough soaking afterward is adviseable.	Most species of grubs are in the third of their three stages of development, and are feeding actively. When soil temperatures decrease in late October, the larvae burrow deeper into the soil to overwinter. If soil temperatures remain warm, larvae stay at the surface and continue feeding. Severely cold winters have little effect on survival. The larvae of this group of pests normally overwinter six inches or deeper in soil. If spring comes early, grub activity can be expected along with skunks and raccoons, which tear up the turf in search of them. Moles, which feed on grubs and earthworms, also become active at this time.
10 Black turfgrass ataenius	This golf course pest overwinters as an adult in the soil under debris in roughs or other protected areas. A few may be seen flying about on warm afternoons in early March, Usually this activity begins when crocus starts blooming and intensifies as the bloom of fed bud appears. Adults of the black turfgrass ataenius can be seen "at wing" in April and are often found in grass catchers after early mowing of golf course greens. These adults begin laying eggs in early May, or about the time Vanhoutte spirea first comes into bloom. Dursban applied to a fairways at this time kills adults and prevents summer infestation of larvae. Check with local extension entomologists for the precise time if needed. A second application, two weeks after the first, may be needed to successfully prevent infestation.	Eggs laid by beetles during May hatch in June and the larvae immediately begin feeding on turf roots and thatch. From late June to mid-July, symptoms of injury include wilting in spite of irrigation. In July, larvae move deep into the soil, pupate and emerge as adults. These adults lay eggs during August, producing a second generation in some states. The second generation larvae are capable of damaging turf. States farther north have only one generation.	By September, adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before the first frost are killed.

Source: Dr. Niemczyk

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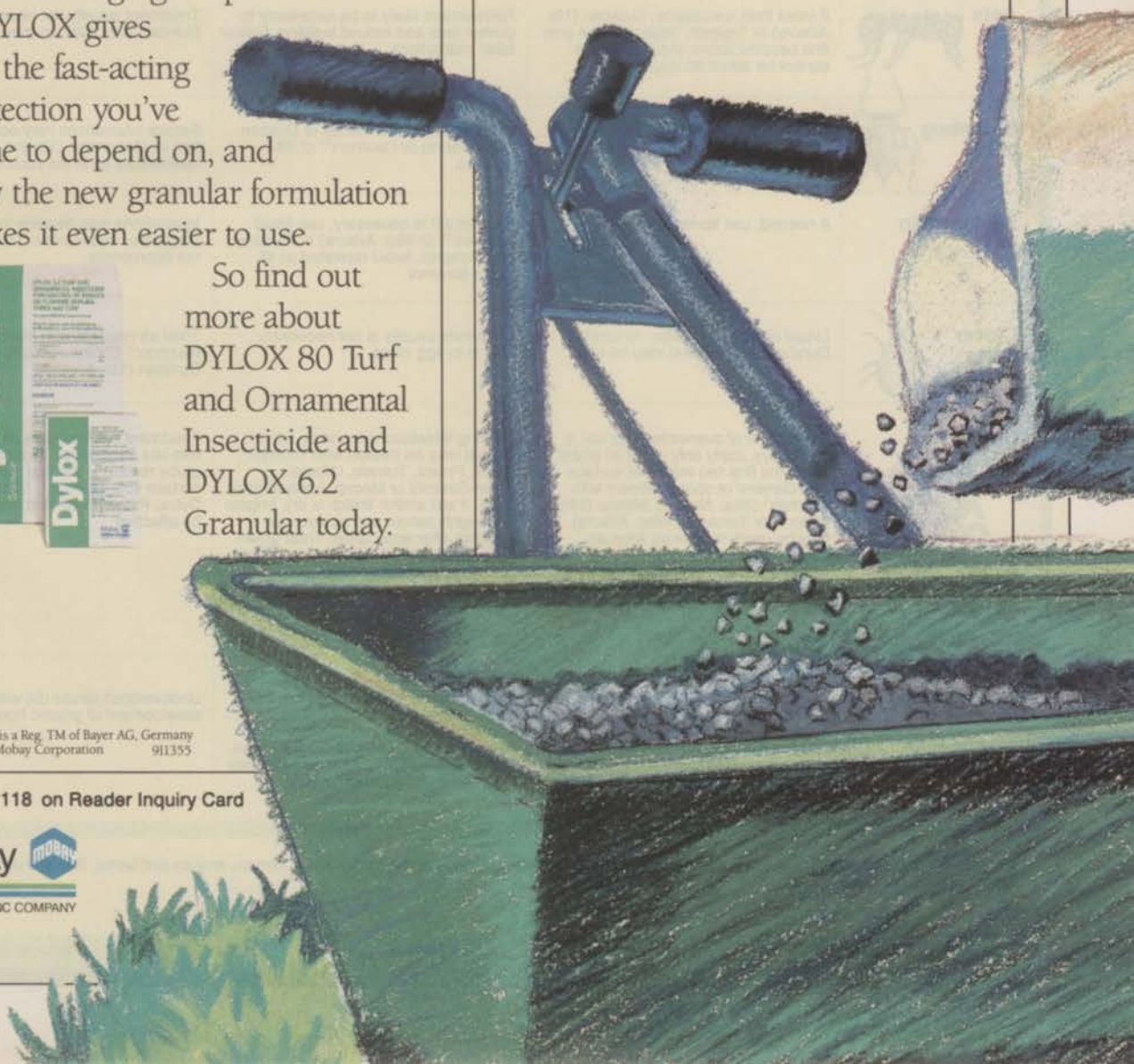

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Cool Season Insects - Control Product Strategies

Pest	Spring April-May	Summer June-August	Fall-early winter Sept.-Dec.
Chinch bugs	When summer damage is expected, preventive application of liquid or granular Dursban (1lb. Ai/acre); Triumph[1] (1lb. Ai/acre) may be used as soon as the insects become active. Preventative applications of insecticides should be completed by the first week in May.	Treat before injury is severe with Dursban (1lb. Ai/acre), diazinon** (2.5-5.5lbs. Ai/acre), or other labeled insecticides.	Treat if necessary, but generally, infestation levels are not high enough to warrant using insecticides.
Billbugs	Same as for chinch bugs.	Treat infestations at same rates as grubs with Triumph[1], diazinon**, Turcam, Mocap or Sevimol. Application in mid-late June most effective. Irrigate following application.	Treatment is usually not appropriate at this time.
Sod webworms	Overwintered larvae can cause damage in April or May. When necessary, apply diazinon** (5lb. Ai/acre), Triumph[1] (1lb. Ai/acre), Dylox or Proxol (6-8lb. Ai/acre). Orthene (1-2lb. Ai/acre). Use flush of water-liquid detergent solution to determine level of infestation.	Make application when damage is seen, or larvae are present. Use Dursban (1lb. Ai/acre), Triumph[1] (1lb. Ai/acre), Diazinon** (5lbs. Ai/acre), Sevin-Sevimol (6-8lbs. Ai/acre), Proxol-Dylox (6-8lvs. Ai/acre), or other labeled insecticides.	Larvae are small and generally cause little damage at this time. Treatment in September reduces population and damage potential for next spring.
Cutworms	The insecticides effective against sod webworm are also effective against cuworms. Apply late in the afternoon. Do not irrigate following liquid applications unless specified on label.	Use Orthene (1-3lbs. Ai/acre), Dursban (1lb. Ai/acre), Triumph[1] (1lb. Ai/acre), Proxol-Dylox (8lbs. Ai/acre) or Sevin-Sevimol (2-4lbs. Ai/acre). Do not irrigate following liquid applications unless specified on label.	Same as for summer.
Ants	If more than a nuisance, Dursban (1lb. Ai/acre) or Triumph[1] applied when ants first become active (April) provides control for about 30 days.	Retreatment likely to be necessary to control ants and mound building. Follow label instructions.	Treatment usually not necessary. Dursban (1lb. Ai/acre) may be used.
Greenbug aphid	Aphid numbers are too low to detect.	Use Orthene (1lb. Ai/acre) or Dusban (1lb. Ai/acre) or Diazinon** (2.5lbs. Ai/acre).	Severe infestations may occur as late as December. Use the same insecticides as in the summer.
Winter grain mite	If needed, use spring treatment.	If treatment is necessary, use liquid diazinon** (2-3lbs. Ai/acre) or Dursban (1lb. Ai/acre). Avoid repeated us of Sevin-Sevimol.	Infestations may develop in December under snow. Treatment is not appropriate.
Clover mites	Liquid diazinon** (2.5lbs. Ai/acre) or Dursban (1lb. Ai/acre) may be used.	Treatment usually is not necessary. Mite is in egg stage.	Treat as needed, with liquid diazinon** (2.5lbs. Ai/acre) or Dursban (1lb. Ai/acre).
Grubs	If treatment of overwintered grubs is necessary, apply only when all grubs are in the first two inches of surface soil. General or spot treatment with Triumph[1] (2lbs. Ai/acre), Mocap (5lbs. Ai/acre) or Turcam (2-4lbs. Ai/acre) may be used. Irrigate as soon as possible after application. Green June beetle larvae are difficult to control at this time. Sevimol (2-4lbs. Ai/acre) may be effective.	Existing infestations found in July or August may be treated with Triumph[1], Dylox, Proxol, Turcam, Oftanol, Sevin-Sevimol or Mocap. Apply at label rates. If soil and/or thatch is dry, irrigate thoroughly before and as soon as possible after application. Treat green June beetle with Sevin (2-4lbs. Ai/acre).	Treatment can be made as late as mid-late September, as long as grubs remain in the first inch of surface soil. Triumph[1], Mocap, Dylox, Proxol at labeled rates may be effective.
Black turfgrass ataenius	Dursban (1-2lbs. Ai/acre) applied to fairways in April for control of overwintered, egg-laying adults, reduces the potential for summer larval infestations. Retreatment after two weeks may be necessary.	If preventative applications were not made, spot or generally treat with Triumph[1] (2lbs. Ai/acre), Proxol-Dylox (8lbs. Ai/acre) Turcam (2-4lbs. Ai/acre), Sevin-Sevimol (8lbs. Ai/acre) or Mocap (5lbs. Ai/acre), as needed.	Undeveloped larvae die with development of ground frost.

[1] For use only by commercial lawn pest control personnel, and only on golf couses tees, greens and aprons, and on sod farms. See soil restrictions. Use only 2lbs. Ai/acre per year.

** Diazinon *may not* be used on golf courses or sod farms.

Source: Dr. Niemczyk

New equipment such as the Dol Overseeder (DOL Ltd., Canada) for granular products, and Rain Saver Jr. (Rain Saver, Walla Walla, Wash.) for liquids, will increase the success potential for biological control agents. The agents are placed directly into the pests' zone of activity.

layer. Some of this equipment is now in use and more will be available for testing.

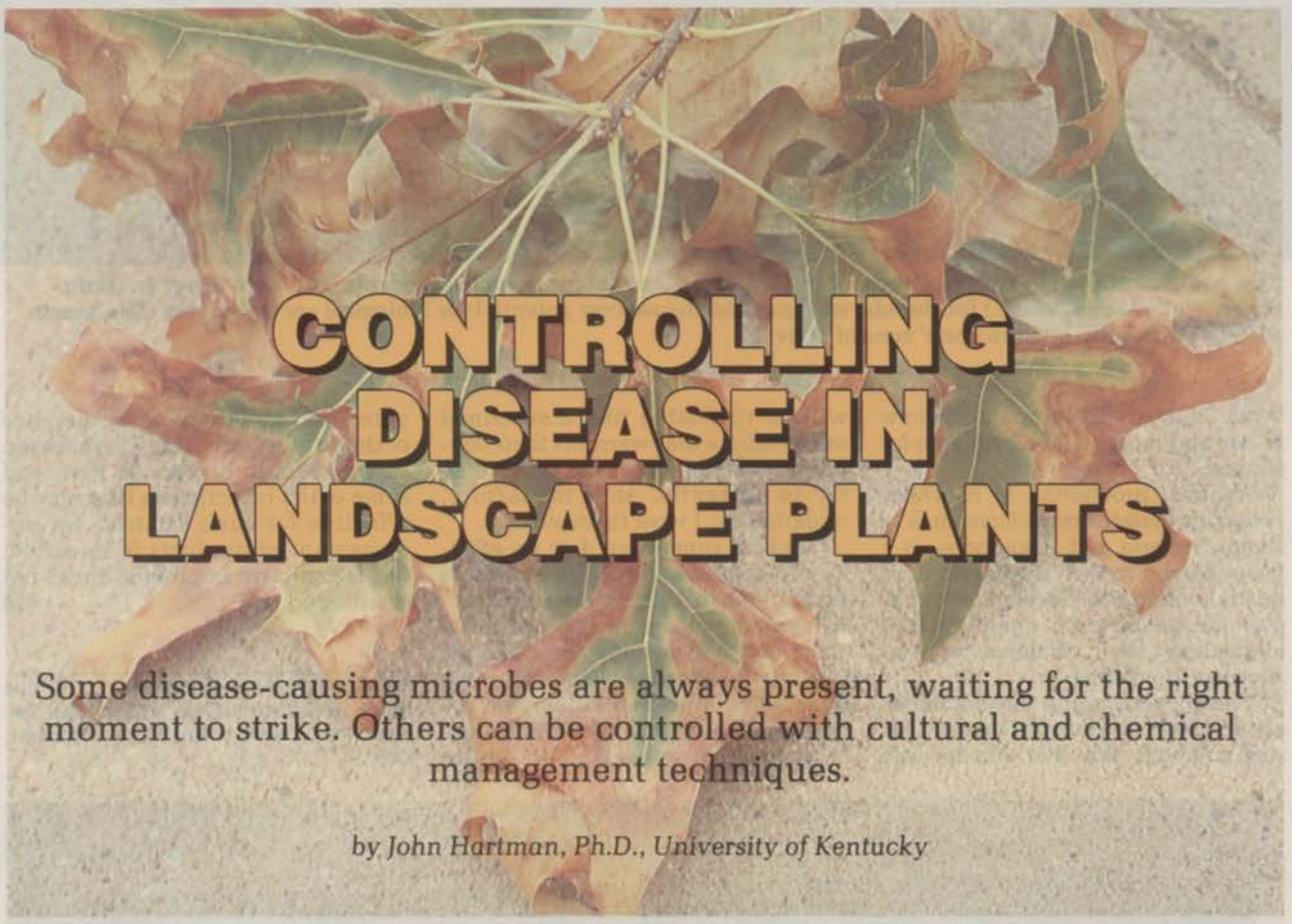
Artifcial production of naturally occurring parasitic organisms, such as fungi, bacteria and nematodes, is a major barrier to their availability. Industry's efforts to develop commercial means of such agents while maintaining their virulence as parasites has intensified.

These encouraging developments are driven by the current demand for such products. Whether this demand will be translated into a sustained sales volume that warrants their continued availability is a risk that industry is currently, and, thankfully, undertaking. I wish them success.

Lacking supportive data on effective biological controls, the controls mentioned in this guide are insecticides. Knowledge of the pest's life cycle and determining the need for treatment, based on evaluation of population levels at a vulnerable period in the insect's life cycle, is the key to successful control. This guide points out the seasonal occurrence of the 10 most important cool-season insect pests to beware in 1991, and some of the insecticides that may be effective for their control. No endorsement of products is intended, nor is criticism implied of those not mentioned. **LM**

Dr. Niemczyk is an entomologist at the Ohio State University's Ohio Agricultural Research and Development Center, Wooster, Ohio.

Chinch bug damage is most severe during July and August.



CONTROLLING DISEASE IN LANDSCAPE PLANTS

Some disease-causing microbes are always present, waiting for the right moment to strike. Others can be controlled with cultural and chemical management techniques.

by John Hartman, Ph.D., University of Kentucky

Landscape plants represent a substantial investment in the aesthetic appearance of the home and commercial landcape. Plant diseases can severely affect the survival or aesthetic value of these plants. Landscape managers are acutely aware that preventive maintenance to control diseases of costly plantings is preferable to affording the cost of replacements.

Invisible culprits

The causes of landcape plant diseases are often misunderstood. This is because they may be caused by microbes that are not easily seen, and because the diseases result from complex interactions between the landscape plants, the disease-causing pathogens, and the environment affecting the interactions.

Landscape managers need to be aware of several important concepts regarding plant diseases:

- Landscape plants differ in their disease susceptibility or resistance. Furthermore, susceptibility of these plants to disease can be altered by the growing conditions.
- Many pathogens such as fungi and bacteria, are living microbes, and cause infections and disease. However, some "diseases," such as iron deficiency, dieback, and decline are caused by adverse growing conditions. Disease-causing microbes often exist unseen in a dormant form, waiting for the right conditions to occur before beginning an infection. Some microbes that cause disease are almost always present, no matter how the landscape is managed, while others can be kept out of the landscape by intelligent management.
- Management of the landscape environment can have a profound effect on whether or not a disease will occur, and how damaging it will be. In general, rainy, foggy weather and poor drying conditions favor foliar diseases, and wet soils favor most root decay diseases. Almost any change in the way the landscape is managed will alter the disease situation, sometimes for benefit, and sometimes for harm.

Biological and cultural control

There are many reasons why biological and cultural practices are preferred for landscape disease management. Reduced uses of chemical pesticides have evident environmental, worker safety, and public health value. Landscape diversity lends itself to custom tailoring of site specific disease control methods, which often favors biological and cultural techniques. Some cultural practices provide broad-spectrum disease management.

Landscape managers need to be aware of new plant disease outbreaks or changes in patterns of old diseases to effectively oversee the health of plantings. The following section describes a few diseases of woody plants that should be of concern to landscape managers.

Pine tip blight

Severe branch dieback of pines in

BIOLOGICAL AND CULTURAL CONTROLS FOR LANDSCAPE PLANT DISEASES

DISEASE MANAGEMENT PRACTICE	DISEASES OR PATHOGENS AFFECTED
Altering plant susceptibility	
Use disease resistant cultivars and species. This biological control act is the safest and most effective way to control diseases. Many nurseries provide disease resistance information for their cultivars.	Resistant cultivars can be used for: juniper tip blight; flowering crababble scab, fire blight, cedar-apple rust, powdery mildew; horsechestnut leaf blotch; Dutch elm disease, and hawthorn rust. Examples of diseases controlled using resistant species: Verticillium wilt and crown gall.
Fertilize based on soil tests. Avoid excess nitrogen which promotes rapid growth and increased susceptibility.	Fire blight of flowering crabapple and pear, cotoneaster, and pyracantha; powdery mildews.
Dip roots of roseaceous plants, euonymous, and other susceptible plants in Galltrol-A or Norbac-84 (a suspension of *Agrobacterium radiobacter*) before planting.	This biological control for crown gall, used in nurseries, could be practical where large numbers of these plants are to be used in the landscape.
Keep trees and shrubs well watered, use mulch around the base of plants.	Dogwood anthracnose, shade tree declines.
Aerify compacted soil throughout the root zone, avoid salt applications, avoid construction injuries to roots.	Shade tree declines.
Avoid unnecessary injury to stems, trunks, and branches.	Dogwood anthracnose, wood decays, various canker diseases.
Protect plants from winter injury.	Boxwood canker, leaf spot.
Modifying the landscape environment	
Select well-drained planting sites. Because of the threat of root and crown rots, sites in which water tends to remain standing are not suited for most landscape plantings.	Phytophthora crown and root rot of azalea, rhododendron, and dogwood.
Select unshaded sites with good air movement for establishment of new plantings. Increase plant spacing and thin tree and shrub canopies to improve air movement and drying. Irrigate early in the day, and avoid the use of overhead irrigation. Control large weeds and nearby vegetation to speed foliage drying.	Rose black spot, flowering crabapple scab, dogwood anthracnose, powdery mildew of various plants.

Source: Dr. Hartman

some landscapes is a symptom of diplodia tip blight, or pine tip blight. This is caused by the fungus *Sphaeropsis sapinae*. Austrian pines of cone bearing age are especially hard hit. Although the disease is normally more severe on stressed trees in the landscape, it has been very destructive to trees that seem to be growing in relatively good sites. Landscapers need to reconsider the uses being made of pines susceptible to tip blight.

Symptoms that characterize the disease include:

- stunted, straw-colored shoots with partly grown needles;
- crystallized, white resin on the infected shoot and on foliage below;
- tiny, black pycnidia (fungal fruiting bodies) on the base of dead needles;
- killed cones, showing abundant pycnidia on the scales; and
- individual dead lower branches.

Annual infections of buds, succulent candles, and immature needles occur in spring. These annual infections, which destroy the buds and shoots, cause a gradual decline of pines in the landscape. Austrian pine is very susceptible, however, mugo and Scots pine are also susceptible. White pine is much less susceptible and tip blight normally does little damage to it.

Prune out all infected twigs and branches before spring. Prune out all cones, even those on green, healthy branches, because they are an important source of fungal inoculum. If spraying is needed, use benomyl, Bordeaux mixture, or fixed copper fungicides. Timing of the three sprays is very important. Spraying should be done at bud break, as candles are beginning to elongate, and as needles are emerging from needle sheaths.

Use a spreader sticker to enhance fungicide retention on the foliage. Consider using better-adapted pines when replanting.

Bacterial leaf scorch

Bacterial leaf scorch of landscape trees, caused by *Xylella fastidiosa*, has been a problem for oak, maple, sycamore, mulberry and elm trees in the Atlantic and Gulf coast states from New York to Texas. Recent reports suggest that the disease has now made inroads into the Midwest, affecting pin and red oaks.

Symptoms typical of bacterial leaf scorch include premature leaf browning and defoliation, and leaf marginal

Diplodia tip blight is advanced on this Austrian pine. If spraying is needed, use benomyl, Bordeaux mixture or fixed copper fungicides.

necrosis. These symptoms appear in late summer or early fall, and are associated with development of the pathogen, xylem inhabiting bacteria.

The disease is difficult to diagnose, and can be mistaken for other causes or water shortage. New diagnostic techniques, such as serological assays (ELISA test), special culture procedures, and electron microscopic observation are needed to detect and diagnose the disease.

In most cases, the disease progresses slowly, and infected trees decline gradually, giving the landscape manager time to begin growing replacements.

In addition, the disease, although spread by leafhopper insects, does not seem to spread rapidly from one tree to another. Recently, however, more rapid decline and death of sycamores from scorch is being reported.

Bacterial leaf scorch is difficult to control. Symptom remission in some trees will occur following injection with an antibiotic, but the remission is only temporary. For now, until new

BIOLOGICAL AND CULTURAL CONTROLS FOR LANDSCAPE PLANT DISEASES

DISEASE MANAGEMENT PRACTICE	DISEASES OR PATHOGENS AFFECTED
Reducing the available pathogen	
Before planting, insist on clean stock. Use disease-free plants from a reputable nusery.	Crown gall, Phytophthora root rot, dogwood anthracnose.
Avoid using planting sites that might be contaminated with pathogens and avoid adding contaminated compost or soil to the landscape.	Crown gall bacteria, nematodes, soil-borne fungi such as *Verticillium*, *Phytophthora*, and *Thielaviopsis*.
When replanting, avoid setting new trees and shrubs in the same spot where the previously sick or dead plant once grew.	Crown gall, Verticillium wilt, black root rot, Phytophthora root rot, root knot nematode.
Prevent movement of equipment, water, or people that might carry soil contaminated with disease-causing fungi, bacteria, or nematodes. Remember that irrigation water can carry pathogens.	Crown gall, Verticillium wilt, black root rot, Phytophthora root rot, root knot nematode.
Rogue out and destroy dead and dying plants.	Dutch elm disease, oak wilt, pine wilt nematode, Verticillium wilt of various plants.
Remove and destroy alternate host plants which may harbor the pathogen.	Cedar-hawthorn, cedar-quince, cedar-apple rust, pine needle rust, eastern gall rust.
Prune out and destroy all dead twigs and branches from trees and shrubs and remove fallen branches from the landscape. Prune diseased branches only when the foliage is dry, and if possible, during the dormant season.	Dogwood anthracnose, pine tip blight, juniper tip blight, fire blight of roseaceous plants, black knot, various twig and branch cankers. Therapeutic pruning for Dutch elm disease.
Cut roots between adjacent plants to stop root graft disease spread.	Dutch elm disease, elm yellows.
Rake up and destroy infected fallen leaves in autumn.	Maple anthracnose.

Source: Dr. Hartman

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SOME CHEMICALS USED TO CONTROL DISEASES IN THE LANDSCAPE

CHEMICAL/TRADE NAME	USES AND REMARKS
benomyl/Benlate	Fungicide with some systemic properties; effective against many diseases. Tolerant strains of gray mold, rose powdery mildew, and apple scab fungi now exist. Alternate or tank mix with other fungicides.
bordeaux mixture, fixed copper	General protectant fungicide for leaf spots and blights. Available in many formulations. Be cautious of possible phytotoxicity.
captan	General protectant fungicide for leaf spots.
chlorothalonil/Daconil 2787	Broad spectrum protectant foliar fungicide used for flower blights, anthracnoses, leaf spots and blights, and needle casts.
copper sulphate pentahydrate/ Phyton 27	Systemic fungicide and bactericide for Dutch elm disease and oak wilt control via trunk injection and several leaf spots and blights via foliar sprays.
ethoprop/Mocap	Nematicide for pre-and postplanting applications.
fenarimol/Rubigan	Locally systemic folear fungicide for black spot, rusts, powdery mildews, and scab.
ferbam	General protectant fungicide. Available in several formulations. May leave a black spray deposit on plant materials.
fosetyl-Al/Aliette	Systemic fungicide for Phytophthora root rot control.
iprodione/Chipco 26019	Broad spectrum locally systemic fungicide for Botrytis blight, and leaf spots.
mancozeb, maneb	General foliar disease protectant fungicide. Available in several formulations.
MBC phosphate/Correx, Lignisan Fungisol, others	Soluble systemic fungicide injected into tree trunks for Dutch elm disease control.
metalaxyl/Subdue	Systemic soil drench fungicide for Phytophthora disease control.
methyl bromide	General soil fumigant; usually combined with chloropicrin.
methyl isothiocyanate + chlorinated hydrocarbons/Vorlex	General soil fumigant.
propiconazol/Banner	Systemic fungicide with eradicant properties. Used for apple scab, leaf spots, blights, powdery mildews, and rusts.
streptomycin	Antibiotic effective against bacterial diseases such as fire blight. Available in several formulations.
sodium methyldithio-carbamate/ Vapam, Busan	General soil fumigant; also used to prevent root graft transmission of Dutch elm disease.
sulfur	Powdery mildew fungicide.
thiabendazole/Arbotect	Systemic fungicide injected into tree trunks for anthracnose and Dutch elm disease control.
thiophanate-methyl/Topsin-M	Systemic foliar fungicide having properties similar to benomyl.
thiophanate-methyl + mancozeb/Zyban	Broad spectrum foliar systemic and protectant fungicide combination.
thiram	Foliar protectant fungicide. Many formulations available.
thiadimefon/Bayleton	Systemic foliar fungicide for rusts, powdery mildews, and some flower and leaf blights.
triforine/Funginex	Systemic fungicide for powdery mildews, black spot, and rusts.
vinclozolin/Ornalin	Protectant fungicide for Botrytis disease control.
zineb	General protectant fungicide. Several formulations available.

Source: Dr. Hartman

GENERAL CHEMICAL CONTROL ADVICE FOR LANDSCAPE PLANTINGS

CONTROL PRACTICE	DISEASES OR PATHOGENS AFFECTED
Inspect the landscape regularly to detect disease outbreaks. Effective use of fungicides on an "as needed" basis requires close monitoring.	Any disease not being controlled with a regular spray schedule.
Be most attentive to early fungicide applications. For many diseases, the fugicides applied from bud break until full leaf which reduce primary inoculum are more important than fungicides applied in full leaf.	Sycamore, ash, and maple anthracnose, pine tip blight, dogwood anthracnose, flowering crabapple scab, many fungal leaf spots.
Diseases are traditionally controlled using protectant fungicides, however landscape managers need to know the capabilities of the new eradicant fungicides for destroying infections that have just begun.	Rose black spot, flowering crabapple scab, rust diseases of various plants, powdery mildew of various plants, Phytophthora root rot of various plants.
Use forecasting systems, if possible, so protectant sprays can be applied prior to infections, and eradicants before infections have gotten out of control. Monitor the weather and determine when infections have occurred or are likely to occur.	A good forecasting system has been developed for apple scab disease control. Remember that leaf moisture provides conditions favorable for many foliar diseases. Be prepared to spray more in rainy seasons, less in dry seasons.
Disinfect tools regularly when pruning to control disease.	Fire blight, Dutch elm disease.
Control insect vectors that carry disease-causing fungi, bacteria, nematodes, and viruses.	Pine wilt nematode, Dutch elm disease, and bacterial leaf scorch of trees.
Treat cankers with a soil-water paste.	Chestnut blight.

Source: Dr. Hartman

controls are developed, we just simply have to live with the disease.

The underground disease

Black root rot infects roots of many landscape plants, the most valuable being Japanese holly, blue holly, inkberry, yaupon holly, and American holly. Other ornamentals known to be susceptible include begonia, cyclamen, geranium, gloxinia, oxalis, phlox, poinsettia, sweet pea, verbena, and viola.

The first symptoms of black root rot include yellowing and marginal scorch of the foliage. Later, twigs or stems may die back and eventually the entire plant may die. The root system of the declining plant is stunted and decayed. Black lesions on the infected roots contrast sharply with the adjacent healthy white portions. Lesions may appear on the tips of feeder roots or elsewhere along the root. Symptoms on infected plants can sometimes be suppressed when plants are growing under high maintenance (plenty of fertilizer and water) regimes.

Black root rot is caused by *Chalara elegans* (formerly *Thielaviopsis basicola*). This fungus can persist indefinitely in the soil or it can survive as a saprophyte on plant debris.

- Plant only disease-free plants in the landscape. If new plants show blackened roots, the presence of *C. elegans* can be confirmed through microscopic examination or laboratory assay.
- Avoid planting susceptible plants in soils known to be infested with the fungus. Be aware that infected annual flowers grown in a bed the previous season can leave enough inoculum to infect new flowers or hollies.
- Badly-infected plants should be removed and the site replanted with a non-suseceptible host.
- There are no effective fungicide drenches available for controlling black root rot in the landscape.
- Good cultural practices may enable some plants to continue to grow in spite of the disease. Plants in the early stages of infection should be well-fertilized and watered.

Dogwood anthracnose threat

Dogwood anthracnose, also called lower branch dieback, is caused by a species of the fungus *Discula*. This disease has received a great deal of publicity during recent years. It affected landscape and forest flowering dogwoods in the Northeast for many years (simultaneously infecting Pacific dogwoods in the Northeast.) Recently, the disease moved rapidly through the mid-Atlantic states to the Southern Appalachian region. There is some concern that it could move into the mid-South and Midwest.

Dogwood anthracnose causes purple-bordered leaf spots which coalesce to form tan blotches. The fungus infects twigs and branches, causing stem cankers, and can eventually move to the trunk. Eventually, infected trees may decline and die.

Maintain good growing conditions by watering, mulching, and avoiding unnecessary injury. Prune out diseased twigs and branches and trunk sprouts. Purchase plants only from a reputable nursery. Never transplant dogwood trees from the wild. Fungicides such as chlorothalonil may help to protect trees from infection.

John R. Hartman is an extension plant pathologist at the University of Kentucky cooperative extension service.

FERTILIZERS: HOMOGENIZED vs. NATURAL ORGANICS

You have a choice between homogenized or natural organic fertilizers. Two industry experts debate the merits of each.

Homogenized: a time-honored process

by Art Mondak, Lebanon Chemical Corp., Lebanon, Pa.

It appears that the process of unending change has come full circle, returning to use of "natural organic" fertilizers once again. Environmentalists and ecologists assert that we can reduce groundwater contamination by replacing modern fertilizers with natural organic materials. Unfortunately, such a retreat would have harmful results, and would fail to accomplish its objectives.

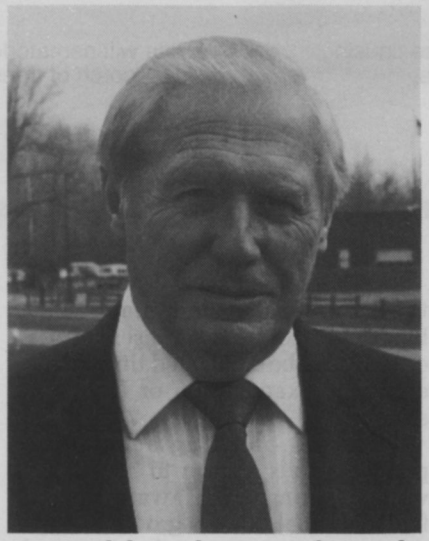
Natural organic fertilizers were used early in our nation's history. Pilgrims used natural organic fertilizers: a fish dropped in a hole, with corn seed on top. The fish, through microbial action in the soil, decomposed and fertilized the corn plant. This worked, but can you imagine fertilization being done like that today?

Commercial fertilizer manufacturing began in this country almost 150 years ago. The first fertilizers were simple blends of N-P-K. The elements were too disperse in these early blends.

Eventually, development of the process known as continuous ammoniation was begun, and homogenized fertilizers were born.

When I started in the fertilizer business with the American Agricultural Chemical Co. in 1965, only homogenized fertilizers were available for agricultural, turf and ornamental uses. Homogenized fertilizers could be manufactured to address the consumer's specific needs. The American Agricultural Chemical Co. was one of the first to produce fertilizers designed for turf use, 10-6-4 and 12-4-8.

Natural organic fertilizers were also available, including block meal,



Art Mondak: modern manufactured fertilizer products are safe and efficient.

cottonseed meal, sludge, tankage and others. However, these natural organics were very expensive to use compared to manufactured homogenized fertilizers.

Safety, efficiency standards

The next major development in commercial fertilizer manufacturing came in response to demands for greater safety and efficiency. if the release of nitrogen could be slowed, then it would be possible to have both quick green-up and long-lasting color and growth. Through the development of synthetic organic nitrogen, these goals were met.

Urea and formaldehyde were combined to produce nitrogen that fertilizes through a process identical to the decomposition of natural organics. Microbial action in the soil, along with moisture and temperature, gradually release nitrogen to meet the growing plant's need for fertilization.

Urea formaldehyde products (commonly referred to as methylene ureas) comprise a family of synthetic organic nitrogens. Using these nitrogens is only a part of a good turf fertilization program. The correct ratio and balance of N-P-K with secondary elements such as iron, sulfur, magnesium and manganese are very important for total turf feeding.

University researchers have shown that the grass plant assimilates N-P-K in a 3-1-2 to 5-1-2 ratio. However, it is not merely the N-P-K in a bag of fertilizer that is important, but how the product is made. When fertilizer is manufactured using continuous ammoniation, all of the major and minor elements are put into slurry, and methylene urea is injected as a liquid into the slurry. The end result is a finished product that is agronomically sound.

This process provides maximum availability of all plant food nutrients, without leaving excessive elements that can find their way into groundwater. Therefore, environmentalists and ecologists who are looking for fertilizers that are environmentally sound should look favorably at modern manufactured fertilizer products.

Rather than returning to the methods of the pilgrim, though, we have available a time-proven process that satisfies the agronomic needs of growing plants while protecting the environment for current and future generations. □

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Natural organics: new aroma, new image

by James Spindler, EnviroGro Technologies, Lancaster, Pa.

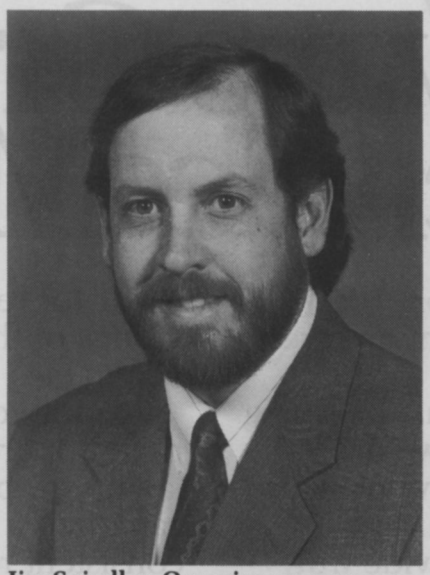
Our first thought of natural organic fertilizers appear as a stereotype of an unprocessed material that is dificult to handle, offends a person's sense of smell and belongs on farm fields. That has all changed, thanks to improved process technology and quality control.

Natural organic fertilizers are still manufactured from the byproducts of various industries. There are, however, new, often high-tech, manufacturing technologies available in the areas of drying, granulating, dust control, and odor control that create very acceptable final products.

The bottom line in making a fertilizer purchase decision is, "does the product give affordable results while being easy to handle?" With today's natural organic fertilizer, the answer is a resounding "yes".

Natural organics are the original slow-release fertilizer that many synthetic slow-release fertilizers strive to mimic. The natural organics rely on soil biota to release the nutrients, and are also the original homogenous fertilizers. All the nutrients are contained in each granule. These products also feature a very low burning potential, micronutrients, and large amounts of organic matter.

Most are granular, relatively dust free, and easy to spread. Some, such as sludges, are excellent for melting ice or frost. Processed natural organic fertilizers have been included in university turf and agronomic trials since the early part of this century. Recently, a wide variety of natural organic products have been included in university trials across the U.S. and Canada. In conversations with researchers, and in reviewing the literature, one learns



Jim Spindler: Organics are now affordable, easy to handle.

that natural organic fertilizers perform in the areas of turf quality as well and often better than their synthetic counterparts. Specifically, research has shown that natural organics, due to their slow release nature, are often a more efficient nutrient source than some synthetic slow release fertilizers. This feature is valuable in that clipping yields are reduced while maintaining high quality. In addition, natural organics have been linked in some studies to reduced thatch layers, increased soil microbe activity, and decreases in both disease and insect occurrence.

Easy on the environment

Besides being an excellent nutrient source, the use of natural organic fertilizers is beneficial to the environment. They provide a beneficial reuse of our society's waste products that often would consume limited landfill space or be dumped in environmentally sensitive locations, such as the oceans or other waterways. While being efficient and effective fertilizers, natural organics have proven themselves to be beneficial in helping to protect groundwater, and have performed comparably to synthetic slow release fertilizers in ground water studies.

Natural organic fertilizers are exciting because of their diversity and flexibility. They come from a variety of sources, including sewage and industrial sludges (tanneries, paper mills, cheese factories), animal production and processing operations, seaweed and other sources. Each of these products has different characteristics, much as synthetic fertilizers have varying characteristics. Natural organics are versatile in that they can be used in a variety of applications and in combination with other fertilizers. The attributes of both natural organic and synthetic fertilizers can be combined to create a superior product.

Look beyond price

It is said that natural organics are more expensive; sometimes they are. However, when making a fertilizer purchase decision, look at the whole package. Natural organic fertilizers typically have large amounts of water insoluble nitrogen (WIN). Some products have greater than 90 percent of their nitrogen as WIN. When comparing the actual cost of nitrogen on a per unit of WIN basis, it turns out that natural organics are a bargain! Nitrogen is not the only nutrient in natural organics which is slow release; in fact, all the nutrients are. The slow release nutrients coupled with high organic matter content, and product versatility give natural organics a much greater value than a simple N-P-K fertilizer.

Certainly, natural organic fertilizers are an old concept, however, the modern versions of these "original" fertilizers have proven themselves valuable in landscape maintenance, and are here to stay. **LM**

Art Mondak is a territory manager for the Lebanon Turf Products Division of Lebanon Chemical Corporation, Lebanon, Pa.
Jim Spindler is the retail/specialty products marketing manager for Enviro-Gro Technologies, Lancaster, Pa.

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Raking system makes infields smooth, safe

by Jack Simonds, contributing editor

From John Deere & Company comes a new line of attachments for its 1200 bunker and field rake system for baseball field maintenance. From Bill Chestnut, a marketing representative with Deere's Golf and Professional Turf Products division in Ottumwa, Iowa, comes solid advice on finer grooming techniques for baseball field maintenance managers from Little Leagues to the big leagues.

Daily maintenance on the diamond's "skinned" areas (the soil portion which forms home plate, the base lines and the area surrounding the pitching mound) goes a long way, says Chestnut, toward what he calls "the objective of consistency" which separates good playing surfaces from the mundane.

"We're finding that not much has been done for this area of the industry in a number of years," says Chestnut. "Part of solving some of the problems is simply through education."

Skinned areas, he says, should be maintained daily for firmness, resiliency and uniformity of footing. One primary goal: player safety.

"When people slide into base, they shouldn't be pulling muscles or breaking bones. A poorly maintained field can hurt a career and that is an opportunity gone," says Chestnut.

Deere's 1200 bunker and field rake breaks up infield soil at Wrigley Field in Chicago. A center-mounted scarifier and rear-mounted field finisher perform the task. A front-mounted blade helps to move the material.

Field condition a deciding factor

Field conditions (infield, skinned and outfield) can have a lot to do with the outcome of the game, Chestnut maintains.

Skinned area maintenance tips from his play book include light daily watering, timely repair of low spots and frequent break up of the surface soil.

The typical skinned area — with a composite soil of 80 percent sand and 20 percent calcified clay — has "a fine pristine finish that looks absolutely smooth," by Chestnut's standards.

Scarify (soil loosening) to a recommended half-inch depth and follow with a pass with a homemade drag or Deere's field finisher in swirling loops. Reverse the direction each time, he recommends.

Chestnut also warns about the potential of a lip buildup along the edge of skinned base line; a problem caused when dirt is pushed into the grassy edge time and time again.

A lip — a prime example of poor maintenance — actually can hamper the game. A low line drive, for example, could strike the lip, causing a quirky hop. Where the ball lands could be either comic or tragic.

Corrective action includes a stiff sweep with a bristle broom or high pressure hose or hand raking. If a lip has formed, it can be taken out with a sod cutter.

Tips include light daily watering.

Drifting back to the outfield, Chestnut prescribes soil aeration at least once a month to curb possible formation of a compaction layer 3 to 5 inches beneath the surface.

Compaction problems

Compaction leads to a host of problems including depriving grasses of water, fertilization and oxygen and poor root development.

In high play areas, he recommends deeper, longer aerator punctures from time to time. Deere's new system includes a slicer/corer and shatter aerator for this circumstance.

General mowing rules also apply both for the infield and outfield. Never, for example, take off more than one third of the plant. More severe mowing, says Chestnut, risks "throwing the field into shock."

Outfield grass blade length ranges from 3/4-inch to 1 1/4 inches; the infield, 3/8-inch to 1 1/4 inches.

Fertilizing? He sees slow-release fertilizing systems as best; eliminating the need to spray.

Deere's new attachment system — 2 1/2 years in research and development — offers a 60-inch front aluminum blade which can perform finishing chores and also push off stands of water in the outfield.

Other attachments include a core removal blade for use after aeration, wide and narrow scarifier tines which can be modified to a 60-inch width with wide or narrow cutting intervals and five depth positions, a 60-inch field finisher screen and a slicer blade aerator. The system is now on the market.

Chestnut says the Deere system can treat the average skinned area in 20 to 30 minutes initially and in about 10 minutes between games.

With other features and including the base drive machine, a "ballpark" package price for the entire system is about $10,300. **LM**

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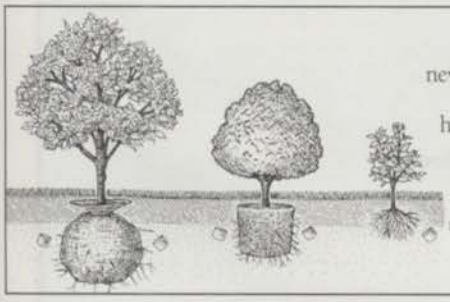

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QUICKIE-QUIZ

Cool-season insect, plant disease control

ED. NOTE: Answers to all questions can be found in this month's Insect Control and Plant Disease Control Guides.

1. In northern zones, chinch bugs can become active during warm days in:
- a. March
- b. April
- c. May

2. Sod webworms generally overwinter as:
- a. adults
- b. larvae
- c. pupae
- d. eggs

2. Bluegrass billbug larvae feed on grass stems, roots and rhizomes. Resulting brown spots could be mistaken for:
- a. drought damage
- b. fungus damage
- c. chemical burn

3. A grub's diet consists of:
- a. thatch
- b. grass roots
- c. soil
- d. thatch, soil and roots

4. In May, cutworm damage can be significant on:
- a. sod farms
- b. golf roughs
- c. home lawns
- d. golf greens

5. Greenbug aphid damage can be detected by:
- a. browning turf
- b. thatch accumulation
- c. turf that has a burnt orange color
- d. thinning turf

6. Turcam is a(n):
- a. organophosphate
- b. carbamate
- c. pyrethroid
- d. chlorinated hydrocarbon

7. Japanese beetle adults fly:
- a. during the daytime
- b. early morning
- c. at mid-day
- d. at night

8. Clover mite eggs hatch:
- a. in April
- b. in fall-early winter
- c. in mid-summer
- d. around January 1

9. Pine tip blight symptoms include (multiple answer):
- a. thinning needles at the top of the tree
- b. rapid cone development as a defense
- c. dead lower branches
- d. crystallized, white resin

10. Recent reports suggest that bacterial leaf scorch has made new inroads into:
- a. the eastern seaboard
- b. the Midwest
- c. Oregon and Washington
- d. Florida

11. Black root rot first appears as:
- a. a bluish tint on leaves
- b. yellowing and scorching
- c. purple-bordered leaf spots

12. Dogwood anthracnose symptoms include:
- a. lesions on the tips of feeder roots
- b. purple-bordered leaf spots
- c. web-like strands covering branches

13. There are many effective fungicide drenches available for controlling black root rot:
- a. true
- b. false

14. Generally, foliar diseases thrive most :
- a. in very dry climates
- b. in rainy, foggy weather
- c. climate is not important

Japanese Beetle

ANSWERS:

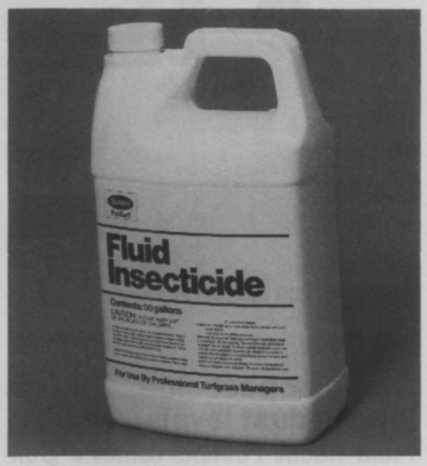
1.a; 2.b; 3.d; 4.d; 5.c; 6.b; 7.a; 8.d; 9.c,d; 10.b; 11.b; 12.b; 13.b; 14.b.

PRODUCTS

Fluid insecticide controls more than 100 insects

The O.M. Scott & Sons Fluid Insecticide is formulated to offer one of the widest spectrums provided by one product, as it controls more than 100 turf, tree and ornamental-damaging insects, including consistent control of the white grub complex.

Scotts says the water-based formulation is easy to handle and mix, and fits easily into an "integrated pest management" spray program.



Circle No. 191 on Reader Inquiry Card

Gain spectrum control with tree, shrub insecticide

Pageant DF from DowElanco is specially formulated for tree and shrub care.

Pageant protects trees and shrubs from virtually all troublesome worms, beetles, borers, scales and aphids. When the spray dries, it bonds tightly to trees and shrubs, and doesn't wash away, even in heavy rain. Comes in a convenient dry flowable formulation.

Circle No. 192 on Reader Inquiry Card

Control aphids, mites and other ornamental pests

Metasystox-R2 from Mobay Corporation is an ornamental insecticide effective for pests that attack shade, nursery trees and shrubs.

Absorbed into the root system, Metasystox-R2 travels in the sap stream to protect the plant from sucking insects and mites.

Mobay says weather will not reduce the effectiveness of the product. The chemical is inside the plant where it cannot wash off or blow away. And, it will not destroy beneficial insects populations.

Metasystox-R2 mixes with water to form an emulsion that is usable in soil injection equipment.

Circle No. 193 on Reader Inquiry Card

Soil modifiers can help turfgrass plants

Power Up Bio-Modifiers can work in harmony with nature in maintaining a balance of essential nutrients and micro-organisms in the soil for optimum plant/soil health and growth.

These Bio-Modifiers actually stimulate biological activity in the plant/soil ecosystem, according to the people at Power Up. According to a press release, "By using these products, the percentage of seed germinated increases and time of germination increases.

"Over a period of time and controlled use, Power Up will enable your soil to release its hidden potential. Through a series of small advances in the soil composition, large life-changing modifications will occur."

POWER UP
INCORPORATED

Circle No. 194 on Reader Inquiry Card

Disposable earplugs, goggles hit market

From Zee Medical, Inc. comes a disposable polyurethane foam earplug as well as a line of goggles in five styles.

The NRR III earplug has a noise reduction rating of 31 dB, is tapered and extra long and the company says is easy to insert and remove in any ear canal.

Vision Shield goggles are lightweight and made of PVC frames which Zee says are impact-resistant and comfortable.

The goggles are manufactured in two pieces with replaceable lenses and soft nose pieces. The line features perforated safety goggles, indirect vents and respirator fit to oversize goggles.

Circle No. 195 on Reader Inquiry Card

Pesticide collection center holds 135 gal.

From Justrite Manufacturing Co. comes a secondary containment storage system which encases two standard 55-gallon drums.

The system, made of molded medium density polyethylene, is 60 inches long by 34 inches wide. It

stands 47 inches and weighs 105 pounds.

The container is equipped with a grating suspended over a 135-gallon capacity sump.

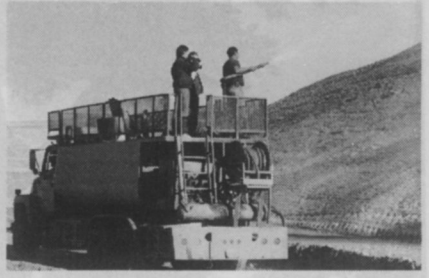
The top cover slides for easy access and lugs on the base allow for lifting with truck forks. The unit is designed to fend off rain water and is equipped with a lock.

Circle No. 196 on Reader Inquiry Card

Spray-on soil stabilizer aids in erosion control

A spray-on soil stabilizer is now available from Environmental Soil Systems, Inc.

Soil Master WR blends liquid copolymers to form a membrane capable of bonding topsoil and protecting



against erosion.

Soil Master WR treatments can also help establish vegetation.

A thicker blend is used in soil erosion problems while thinner blends act as tackifiers in hydro-

seeding and mulching.

It is available in 55-gallon drums.

Environmental Soil Systems says Soil Master WR is safe for the environment, as well as non-toxic and non-flammable. It can be used for planned residential communities and other commercial landscapes including parks and golf courses.

Circle No. 197 on Reader Inquiry Card

New spreader versatile; easy on maintenance

From Gandy Co. comes a new 42-inch drop spreader which can be used in a variety of settings.

The Turf Tender spreader—on a three-point hitch mount—can accurately spread sand, salt or sodium chloride on ice, topdressing or granular pesticides with equal ease.

The hopper holds 3.5 cu. ft. of material. Internal rotors are powered by 12-volt electric motors and all controls can be led to the tractor seat area.

The bottom is made of stainless steel and snaps off for cleaning.

Circle No. 198 on Reader Inquiry Card

Equipment catalog full of newest gear

Witco Industries has released its 1991 landscape management equipment catalog. The 94-page guide features commercial equipment in heavy use settings including trench diggers, power sprayers and other big ticket items used at golf courses, cemeteries, schools and other landscape settings.

Witco says prices are competitive and all equipment comes with limited warranties.

Circle No. 199 on Reader Inquiry Card.

Landscaping tool line offers job flexibility

From V & B Manufacturing Co. comes a new line of landscaping tools the firm has dubbed "high tech designed" because of patents of the unique shapes and acclaim from industry experts.

The Groundbreaker series was engineered with nursery, landscaping and gardening in mind as well as construction work involving trenching.

The head designs are different than traditional past shapes, are made of a lighter ductile iron and come in a mix of handle lengths for various situations.

The company says the nine tools will perform 18 different job functions.

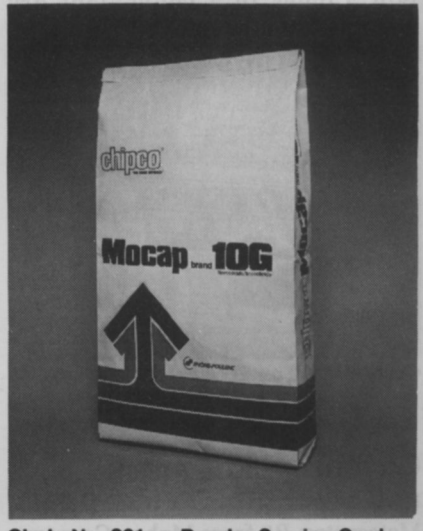
Circle No. 200 on Reader Inquiry Card

Granular pesticide lowers dust levels

From Rhone-Poulenc comes a granular formulation of Chipco Mocap 10G pesticide. The new form has reduced dust levels during application, the company says.

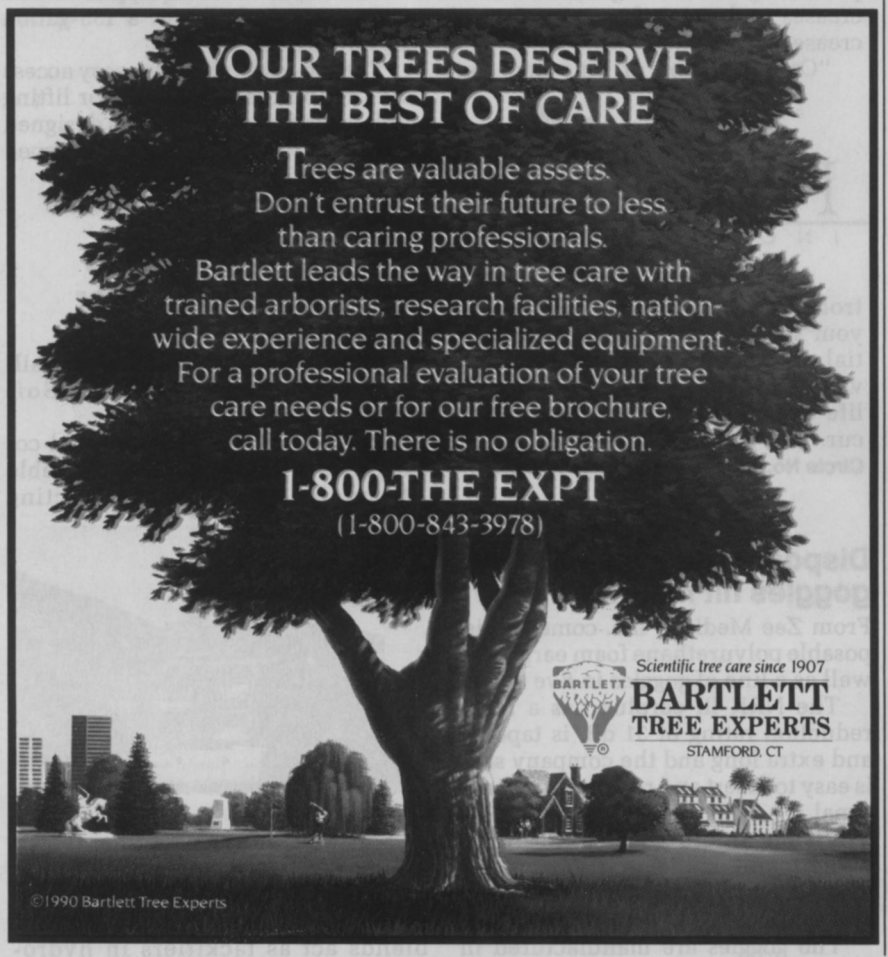
The pesticide can be applied between 50 and 200 pounds per acre, depending on the pest and has been used to control surface and subsurface insects such as white grub, mole cricket, chinchbug, black turfgrass ataenius beetle, bluegrass billbug, sod webworm and nematodes.

After application, Chipco Mocap 10G needs watering or soil incorporation.



Circle No. 201 on Reader Service Card

continued on page 59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Circle No. 102 on Reader Inquiry Card

For the turf manager who worries about every spot, patch and mold.

Now there's Curalan™ fungicide.

Now broad spectrum CURALAN controls eight diseases without harm to turf so turf managers can sleep nights.

Brown patch and dollar spot control.
CURALAN controls these tough diseases plus six more including leaf spot, Fusarium patch and grey snow mold.

Two-way protection.
CURALAN gives you the option of preventive and curative treatments by adjusting the application rate.

Labeled for all turf grasses.
You can apply CURALAN to any turf grass variety, at any stage of growth without concern for injury.

CURALAN is part of a growing line of turf ornamental products from BASF.

Simple solutions to complex problems.

For more information call
1-800-878-8060.

BASF Corporation

BASF

Always read and follow label directions.
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Circle No. 101 on Reader Inquiry Card

CLASSIFIEDS

RATES: $1.25 per word (minimum charge, $40). Bold face words or words in all capital letters charged at $1.50 per word. Boxed or display ads: $105 per column inch-1x (one inch minimum); $100-3x; $95-6x; $90-9x; $85-12x. (Frequencies based on a calendar year). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $20 to total cost of ad per issue. Send ad copy with payment to Dawn Nilsen, LANDSCAPE MANAGEMENT, 1 East First Street, Duluth, MN 55802 or call 218-723-9483. Fax Number 218-723-9437.

BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

CURBMATE. The growth industry of the 90's is concrete landscape edging installed by the Curbmate machine. Excellent profits, low overhead, low start-up. $5,495. Call (801)262-7509. 6/91

LET THE GOVERNMENT FINANCE your new or existing small business. Grants/loans to $500,000. Free recorded message: (707)448-0330. (OL8) 5/91

For Sale or lease - 17,000 sq. ft. greenhouse, fully automated with hot water heat. Automatic watering system and vent control. P.O. Box 27, McGaheysville, Virginia 22840. 703-289-9661. 6/91

LEARN Professional Landscaping and Gardening at home. Accredited program provides thorough training in all phases of commercial and residential landscaping. Certificate awarded. Free booklet describes program and opportunities in detail. Lifetime Career Schools, Dept. A-480, 101 Harrison St., Archbald, PA 18403. 9/91

WANT TO BUY OR SELL A GOLF COURSE? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517)484-7726. TF

WANTED - MANUFACTURERS REPRESENTATIVES AND DISTRIBUTORS - to represent a line of high quality hydroseeding tackifiers. For more information, contact PRSM, Inc. at (215)430-3960. 5/91

CURB KING: Curbing machine that lays continuous concrete landscape borders. Financing available. Low investment, high returns. For information call 303-434-5337 or write P.O. Box 40567, Grand Junction, CO 81504. TF

EDUCATIONAL OPPORTUNITIES

GRAYSON COLLEGE, Denison, Texas. Two-year technical program in Golf Course and Turfgrass Management. 18-hole golf course on campus. Dormitories, placement assistance, financial aid and scholarships available. Contact: GCC, 6101 Grayson Drive, Denison, TX 75020. 214-465-6030, Extension 253. 6/91

FOR SALE

I.P.M. sprayer 2x200 gallon poly tank, D30 hypro pump, 5 HP B&S engine, electric reel, 300 ft. hose, J.D. 2 GPM shower head. 12 months new, used 4 times. $2,100 or B.O. 617-846-2848. 5/91

HYDRO-MULCHERS AND STRAW BLOWERS: New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214)840-2440, (800)527-2304. TF

KELWAY® professional **SOIL ACIDITY** and **SOLUBLE SALTS TESTERS,** available from distributors nationwide. **HB-2** and **SST** brochures from **KEL INSTRUMENTS CO., INC.,** Dept. 1, P.O. Box 2174, Vineyard Haven, MA 02568. (508)693-7798. 10/91

BENT GRASS available for immediate pick-up or delivery. For information call Jade Run Turf and Sod Farm: 800-332-1220. 12/91

PROPERTY MAINTENANCE COMPANY - DENVER, COLORADO: Over eight years strong growth. Sales $733,000. Extremely profitable. $75,000 down. Seller will finance. Omni Business Brokers (303)753-1233. 6/91

REINCO HYDROGRASSERS and power mulchers in stock. Opdyke Inc. (Philadelphia Area) 215-721-4444. TF

FOR SALE: Two used Brouwer Harvesters - reconditioned. Used Brouwer 7 gang manual lift mowers. New and used Roseman gang mowers and Brillion seeders. Hitch hikers, new and used in stock. New and used Kubota and Ford tractors. Land Pride Equipment. - McCord Terra Tires. Huber Ranch Sod Nursery, Inc., Schneider, IN. Phone: 219-552-0552. 6/91

PAUL FLORENCE Turfgrass: Quality seed for the Turf Professional. Elite Bluegrasses, Fine-Leaf Ryegrasses, and Turf-Type Tall Fescues. Custom mixing our specialty. Silva-Fiber mulch and supplies for hydro-seeders. Quality Elite Bluegrass Sod. Call us! (513)642-7487. 13600 Watkins Rd., Marysville, OH 43040. TF

Sod, sprigs, row planting, strip sodding, solid sodding, fairway renovations, complete turn-key jobs. 16 yrs. golf course experience. 1-800-458-4756, DOUBLE SPRINGS GRASS FARM, Searcy, Arkansas. TF

FOR SALE - HYDROSEEDER - FINN TITAN 3000: Very good condition. John Deere diesel engine with 800 hours. Mounted on a 1978 Mack 685. $32,000. 216-539-4450. 5/91

PENNSYLVANIA GROWN SOD: PENNCROSS Bentgrass-Fourway Blend of BLUEGRASS-BLUEGRASS/RYEGRASS Blend-Shipped via our trucks - forklift unloaded. **VICNOR FARMS, INC.,** Connoquenessing, PA 16027. **800-842-0461** 6/91

FOR SALE: Northwestern Indiana sod business serving the Chicago and Indianapolis markets. Includes all rolling equipment, buildings, irrigation and 1 1/2 million yards of harvestable sod on 530 acres. A profitable well established business. Call or write **WILLE & STIENER REALTORS,** P.O. Box 290, Crown Point, Indiana 46307. Attention: Gil Stiener. Phone (219)663-2990. 5/91

'86 ROTOMIST BLOWER for sale: 500 psi bean pump powered by a 4 cyl. Ford gas engine. 250 gal. tank. Contact Mike Young at Edmonds Landscaping, Halifax, Nova Scotia, Canada, 1-902-423-8174, Fax 1-902-455-9956. 5/91

SPYDERS - New/Used/Rebuilt. New Kohler engines, short blocks and a complete line of engines and Spyder replacement parts. New Style Nichols-Fairfield Torque Hub Kits, heavy duty Wilton Caster Kits, Remote Air Cleaner Kits, heavy duty Carriage Side Plates. We repair and rebuild hydraulic pumps and motors for your Spyder. Same day service. Call or Write: Mobile Lift Parts, Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. 815-455-7363; 1-800-397-7509. 5/91

One Lawn Truck - Mercedes Benz Diesel. Excellent condition - 1981. 1,200 gallon 2 compartment stainless steel tank. Also holds 1,000 lbs. of dry fertilizer. Hydro-cell 25 gallons per minute pump. 2 hose reels with guns. $8,900. 201-891-6035. 5/91

QUALITY TURF GRASSES: Sod or sprigs. Meyer Z-52, Tifgreen II, Tifdwarf, Tifway. Sprig planting available. Quail Valley Farm, Inc. 1-800-666-0007. 5/91

High quality professional horticulture training videos. 100% satisfaction guaranteed! Call or write for a free color catalog. San Luis Video Publishing, P.O. Box 4604, San Luis Obispo, CA 93403 Tel: (805)545-5426. Fax: (805)545-5423. 6/91

AKRON LANDSCAPE SUPPLY. Complete line of commercial walk behind mower parts, air filters, blades, monofilament line and accessories. Call 1-800-666-5344. 6/91

PIPE LOCATOR INEXPENSIVE! Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

Jacobsen - E10 - 7 units, rebuilt mowers. Excellent condition, $6,100. 5 gang Toro, good condition. $750. (501)664-2136 or (501)776-3802. 6/91

NEW AND USED BROUWER EQUIPMENT: Mowers - VACS - Fork Lifts - Harvesters - and full line of replacement parts. Contact Glenn or Ed Markham at 1-800-458-3644. TF

BULK HARDWOOD: Pine and Cypress mulches, woodchips, lumber, timbers, stone products and many other landscape and nursery supplies. Express delivery and UPS next day shipment. Call today, GARICK and LANDSCAPERS WHOLESALE, INC. 1-800-322-7700, nationwide. In Ohio, 1-800-631-1395. 6/91

Jacobsen HF5, lightweight fairway mower, diesel, sharpened, $7,900. Toro Greensmower, sharpened, $3,300. Jacobsen Greensmower, sharpened, $3,300. '86 Ransomes 213-D, Kubota Diesel, sharpened, $8,400. '85 Jacobsen 5-ganged hydraulic fairway mower with power pac, sharpened, $5,250. Photos available. Call for information 313-653-5695. 5/91

PUMPS: Reconditioned Wanner Hydra-Cell D-10, D-25 and John Bean Pumps. New and reconditioned parts and service for your pumps. Industrial Services Company, 2727 Rome Corners Road, Galena, Ohio 43021. Call Jim Hughes (614)965-4112. 6/91

LAWN SEED: Wholesale. Full line of top quality grasses. Improved bluegrass varieties, tall fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 89 Hanna Parkway, Akron, OH 44319. Call collect (216)724-1266. TF

Finn Hydroseeders, Mulch Spreaders, Krimpers, Pit Burners, Fiber Mulch & Tackifiers. New & Used. **Wolbert & Master, Inc.,** P.O. Box 292, White Marsh, MD 21162, 301-335-9300, 1-800-234-7645. TF

"We used ROOTS* Root Growth Enhancer on a large residential project in New England that required installation of over $100,000 worth of broadleaf evergreens (laurel and rhododendron) on a hillside. This plant material was installed in September, which is a crucial time for planting due to the nature of our winters. The hillside location also subjected the plants to cold winds that began immediately after planting was finished. The ROOTS biostimulant significantly reduced the transplant shock we would have normally encountered, and we lost very little stock. Some of the large trees we installed cost $5,000 apiece and you don't want to lose even one of those. In the future, we plan to use ROOTS on all of our large plantings."

Ron Boucher, President
Ron Boucher and Associates
Sudbury, Massachusetts

roots inc.

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25 Science Park, New Haven, CT 06511

*ROOTS is a trademark of LISA Products Corporation

Circle No. 124 on Reader Inquiry Card

Please call us toll-free at 1-800-342-6173 for additional information

Meyer Z-52 zoysia sod, bermuda-free, forklift delivery to the Mid-Atlantic region. Oakwood Sod Farm, Salisbury, MD 301-742-3086. 7/91

HELP WANTED

ASSISTANT TURFGRASS MANAGER: Progressive family owned sod farm is seeking an individual with turfgrass and/or farming background. Turf experience and degree is preferred, but not required. Responsibilities include managing all phases of Bluegrass development from seeding to mature sod. Also assist in set up and operation of a golf range. Applicant must provide leadership, like outdoor work and enjoy laxed off season. Salary commensurate with qualifications. Health benefits, retirement plan and profit-sharing available. Send resume to DeBuck's Sod Farms, 142 Mission Land Road, Pine Island, New York 10969. 5/91

LAWN CARE DIVISION MANAGER: Established Missouri based Landscaping Company looking for top individual with leadership background to manage St. Louis Lawn Care Operation. This person should be familiar with all technical, production and telephone aspects of full service lawn, tree and shrub care. Must be 100% committed to improving the performance of the job. Base salary plus performance bonuses, insurance and profit sharing. Please send resume complete with references and salary history to LM Box 486. 5/91

ORKIN PLANTSCAPING DIVISION: Needs experienced managers and sales executives to meet the needs of its fastest growing division. Plantscaping is the design, sale and maintenance of interior foliage plants located in malls, office buildings, hotels and civic buildings. Horticultural background, management or direct sales experience necessary. If you're in a rut or simply looking for a way to grow in the green industry, send your resume to: Gordon Crenshaw, Orkin Plantscaping Division, P.O. Box 647, Atlanta, Georgia 30301. 5/91

Assistant Manager needed for Sod Operation located in Louisburg, NC, 40 miles N.E. of Raleigh. Turf related employment history a plus. Degree in Agronomy or Turf related field required. Excellent salary and benefits available. Send resume to United Turf, Inc., Rt. 1 Box 170, Powells Point, NC 27966. 5/91

LANDSCAPE DESIGNER/ARCHITECT: Established landscape firm located in western suburb of Chicago seeks individual with thorough knowledge and background of landscape design, estimating, construction and sales. Competitive salary plus commission. Robert Hoy Company, 345 Ashland Avenue, River Forest, IL 60305. 708-366-7339. 5/91

HORTICULTURIST - 36 HOLE PRIVATE country club seeks a hands-on individual to manage golf course tree program and extensive clubhouse landscape plan. This position requires supervisory skills. Send qualifications to Vineyard Golf & Country Club, care of Mr. Peter Metcalf, 400 Vineyards Blvd., Naples, FL 33999. 5/91

USED EQUIPMENT

NEW and USED EQUIPMENT--Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216)669-3567, (216)669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

Two Vermeer Tree Spades: *T-44 on C-30 '82 Diesel Chevy, Like New $11,500. *T-66 on C-65 '73 Gas Chevy, $11,000. (405)842-7177. TF

BUCKET TRUCKS, Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Asplundh (Morbark Disc Type), New Asplundh Drum Type. Best prices anywhere. Used Chippers - Asplundh, Woodchuck, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as is or reconditioned. Opdyke's, Hatfield (Philadelphia Area) 215-721-4444. TF

BUCKET TRUCK: Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 414-691-4306. TF

WANTED

Princeton Towboy Turf Harvester, working condition. (301)928-3620 ask for Jack. 5/91

MISCELLANEOUS

Birds or Animals
a PROBLEM??
Scare them away with
SHELLCRACKERS®
a *PEST CONTROL DEVICE*
that safely disrupts
eating & nesting habits.
For more info, call or write:
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FREE CATALOG of training videotapes including Irrigation, Pesticide Use & Satety, Arboriculture, Equipment Maintenance, Pruning, Plant Selection, Fertilizers, Planting Techniques, Turf Management, Xeriscape, Landscape Design. **$5.00 Sample Video** includes $10 Discount Coupon. Satisfaction Guaranteed! Check, Visa, MasterCard. VEP, California Polytechnic State University, San Luis Obispo, CA 93407. 1-800-235-4146. 8/91

FREE PARTS CATALOG-- If you own a 36"--48"--52" walk behind mower and you feel you're paying too much for parts, call Preco Distributors toll-free and request our parts catalog. **BELTS, BLADES, GRASS CATCHERS, WHEELS AND LOTS MORE!** Replacement parts that fit: **BOBCAT, BUNTON, KEES, EXMARK & OTHERS.** 1 day shipping coast to coast available. All parts carry a 90-day warranty. Don't wait, call 24 hours a day. **TOLL-FREE 1-800-428-8004, in Mass. 413-596-5505. PRECO DISTRIBUTORS, 97 Center St., Ludlow, MA 01056.** TF

SERVICES

TRAINING PROGRAMS: Effectively train your new and experienced employees in the least amount of time with minimal management involvement. Complete weekly lesson packages including handouts, quizzes and documation forms. Train at your location, at your convenience. Topics include pesticide safety and handling, agronomic and horticultural issues, customer service and sales, driver safety and more. Both lawn and tree and shrub care programs available. Recertification credits often available. Pesticide Control Technology Services. Call Paul Skorupa at 401-294-1384. 6/91

ATHLETIC FIELDS REBUILT: Baseball, Football, Soccer Fields rebuilt and sodded with **BLUEGRASS SOD-** A 160' X 360' Field $20,000. Plus or minus 20% within 150 miles of Pittsburgh. **CONSULTING** on improving and maintaining existing fields. **VICNOR FARMS,** Connoquenessing, PA 16027. **800-842-0461.** 6/91

Attractive opportunities are immediately available in the State of Bahrain, Arabian Gulf, for following suitably qualified professionals:

SENIOR HORTICULTURIST
(about U.S. $46,300 p.a., TAX-FREE)

Challenging senior position. Will provide specialist advice on arid region plants and flowers. Nursery organization and operation, stock control, care of plants and disease control, staff development. Preferably M.Sc. in related major of study and minimum ten years experience. Middle East expertise an advantage.

SENIOR LANDSCAPE ARCHITECT
(about U.S. $41,300 p.a.,TAX-FREE)

- For field/operation assignment; experience with landscaping contractor essential.
- For design office staff; landscaping strategies and design for major parks, gardens and roads. Knowledge of arid regions' plants and irrigation systems. Preferably M.Sc. in related major study and minimum 8 years experience. Middle East experience and experience of design at national and regional level an advantage.

LANDSCAPE ARCHITECT
(about U.S. $35,400 p.a., TAX-FREE)

- For field/operations assignment; experience with landscaping contractor essential.
- For design office staff; landscaping design of parks, gardens and roads. Experience on major design projects and construction. Knowledge of arid regions' plants and irrigation systems and Middle East experience an advantage. Related B.Sc. and minimum six years experience.

Bahrain, connected to the Arabian mainland by a causeway, is a commercial and banking center for the Arabian Gulf area, with a large community of expatriates enjoying a high standard of living. Advanced medical services, varied sports activities, top restaurants and hotels, traditional and cultural aspects provide a rewarding lifestyle for the discriminating resident.

Two years employment contract, renewable on annual basis (family or single status). Furnished accommodation, free medical coverage in State Hospital, school fees assistance, six weeks paid annual leave, air fares paid.

Please send detailed resume immediately to: **Assistant Director for Parks, Technical and Environmental Affairs, Central Municipality Council, P.O. Box 53, State of Bahrain (Arabian Gulf).**

STATE OF BAHRAIN • CENTRAL MUNICIPALITY COUNCIL

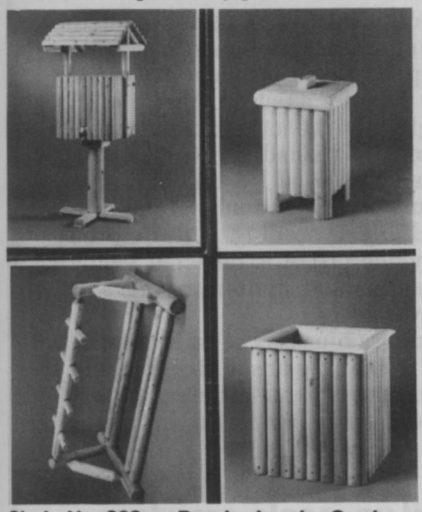
PRODUCTS *from page 54*

Spice up course with cedar accessories

From Green Pro, Inc. comes a line of cedar accessories for the golf course.

Among the company's offerings are included a tee box bench, wood waste container, soil and seed box and cooler stand.

The firm also manufactures a cedar log rack for the bag drop area. Green Pro says the accessories are maintenance free and competitively priced.



Circle No. 202 on Reader Inquiry Card

Life-size silhouettes add to scenery

Silawnets are life-size silhouettes which make eye-catching additions to lawns, gardens or golf courses. They are available in a variety of people and animals, including golfer silhouettes. They are constructed of durable colorfast black, rigid plastic.

Circle No. 203 on Reader Inquiry Card

Features set washer apart from the pack

A new HydroBrush pressure washer line from Falkenberg, Inc. features engine sizes from five to 16 hp, power on demand throttle control idles and smooth start-up systems.

Falkenberg's line also boasts of labor-saving power nozzles that give

zero degree nozzle spray with a 25 degree fan.

The company's pressure washers also are equipped with fold-up handles and kick-down front braces as space savers during transportation.

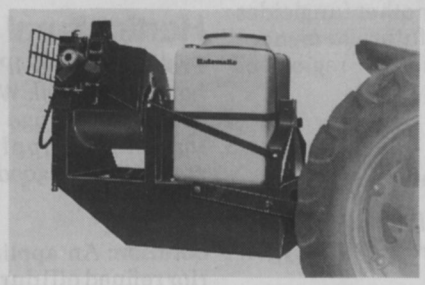
Circle No. 204 on Reader Inquiry Card

Heavy-duty sprayer takes on many tasks

From Automatic Equipment Manufacturing Co. comes the MC-50R model heavy-duty sprayer.

Features include a 50-gallon polyethylene tank, roller pump and suction hose connection for premixing chemicals.

The unit hitches to a tractor and has a triple V-belt drive.

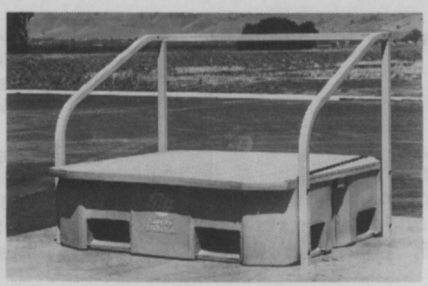


Circle No. 205 on Reader Inquiry Card

Spill containment pallets meet safety requirements

The Safe-T-Pallet from Safety Storage, Inc. of Hollister, Calif., complys with current regulatory agency requirements.

The pallets are designed to accommodate up to four 55-gallon drums or other types of containers weighing up to 5775 lbs. maximum storage capacity.



Circle No. 206 on Reader Inquiry Card

AD INDEX

NO.	ADVERTISER	PAGE NO.
101	B.A.S.F. Corp.	55
102	Bartlett Tree Experts	54
105	Cushman, Inc.	17
106	Cushman, Inc.	17
107	Cushman, Inc.	17
108	Cushman, Inc.	17
103	Davey Tree Expert Co.	22
104	Deere and Co., John	2-3
133	DowElanco	23
132	Drexel Chemical Co.	18
134	Grace Sierra Co.	49
109	ISK Bio Tech. Corp.	20-21
111	Jacobsen Div. of Textron	47
112	Jacobsen Div. of Textron	47
113	Lebanon Chemical Corp.	14
114	Lebanon Chemical Corp.	16
115	Lofts Seeds, Inc.	CV4
119	Maibo Manufacturing, Inc.	46
118	Mobay Corp./Dylox	35
116	Mobay Corp./Dyrene	CV3
117	Mobay Corp./Tempo	6-7
120	Monsanto Co.	29
121	Nor Am Chemical Co.	41
122	Olathe Manufacturing, Inc.	22
123	Reemay, Inc.	15
110	Roots, Inc.	27
124	Roots, Inc.	57
125	Sandoz Corp.	30-31
126	Service Master Co.	45
127	Tee 2 Green Corp.	CV2
128	Toro Co.	13
129	Turf Seed Co.	5
130	Turfco Manufacturing, Inc.	28
131	Valent USA Corp.	19

New Products

205	Automatic Equipment Manufacturing, Inc.	59
192	DowElanco	53
197	Environmental Soil Systems, Inc.	53
204	Faulkenberg, Inc.	59
198	Gandy Co.	54
202	Green Pro, Inc.	59
196	Justrite Manufacturing Co.	53
193	Mobay Corp.	53
194	Power Up, Inc.	53
201	Rhone Poulenc Ag Co.	54
206	Safety Storage, Inc.	59
191	Scotts & Sons, O.M.	53
203	Silawnets	59
200	V & B Manufacturing Co.	54
199	Witco Industries	54
195	Zee Medical, Inc.	53

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PROBLEM MANAGEMENT

Treatments for oak wilt

Problem: *Are there any fungicidal treatments being studied for oak wilt? (Ohio)*

Solution: Yes, there are fungicidal treatments showing promising results on certain species of oaks. Ciba-Geigy representatives report that their experimental liquid fungicide, Alamo, is being used to manage oak wilt caused by *Ceratocystis fagacearum* on live oaks in Texas. At present, Alamo has a special label permit for use on oak wilt disease of live oaks, in Texas only.

The systemic fungicide is injected into the trees at the root flare, similar to the Dutch elm disease treatment technique with Arbotect. Ciba-Geigy representatives recommend that trees which have more than 30 percent canopy loss should not be treated. Preventive treatments are apparently more effective. They also suggest that trees which are within 150 feet of the affected trees and have greater potential for getting infected should be treated.

Ciba-Geigy suggests that for preventive treatments, use Alamo fungicide at 2 ml/liter per inch of trunk diameter. Use the therapeutic rate (3 ml/liter/inch trunk diameter) on trees that have specific oak wilt symptoms, but have less than 30 percent crown loss.

Let us hope that Alamo or similar other fungicides may become available in the near future to manage this destructive disease on oaks in other regions of the country.

Will rain nullify Cygon?

Problem: *What effect would rainfall at midnight of the same day have on a birch tree sprayed with Cygon 4E at 6 p.m.? (Toronto, Canada)*

Solution: Generally, two hours of drying weather is sufficient to prevent excessive pesticide from being washed off leaf surfaces with rain. Since Cygon is a systemic insecticide, it will be absorbed through leaf tissue and distributed within the plant. Once absorbed, the material is not subject to rain water washing. In your situation, there was about six hours time lapse between applicator and rain fall and, therefore, pesticide loss should not be a problem.

However, if the material remained on the foliage for an extended time without quickly drying, this may contribute to phytotoxicity and/or be subject to rain water washing. This would adversely affect the product efficacy and performance.

Read and follow label specifications for better results.

Repairing glycol damage

Problem: *What can be done to correct the accidental spill of material used in our cooling and heating system. We believe it is ethylene glycol. The turfgrass around the affected area is doing poorly. Will it recover? (Texas)*

Solution: In answer to your question, Richard Rathjens, senior agronomist with Davey Tree, made the following comments:

"Ethylene glycol ($C_2H_6O_2$) is commonly used as an antifreeze in cooling and heating systems. Ethylene glycol is known to be toxic to plants in the landscape.

"Depending on factors such as the amount spilled, soil type, rainfall that occurred following the spill, etc., the accidental application of ethylene glycol to a lawn will probably kill the existing grass plants. Likewise, ethylene glycol in the soil can prevent new plants from becoming established. For this reason, the sod and soil to a depth of at least eight inches should be removed and replaced prior to reestablishing the lawn by sodding or seeding. If during the removal of soil ethylene glycol is detected below eight inches, the additional contaminated soil should also be removed."

Also, consider doing a bioassay of soil from the affected areas prior to seeding or sodding to make sure that the contamination from ethylene glycol is not going to present a problem in the future.

Horticultural oil vs. scale crawlers

Problem: *In our IPM program, we would like to use horticultural oil. We are planning to use a first application to manage the eggs of scale insects. We are thinking of applying oil again to manage the crawlers. How good is oil against scale crawlers? (New York)*

Solution: An application of horticultural oil (superior refined oil) during late winter or early spring will help manage the scale eggs. Oil will smother the egg mass, suffocate and kill them. Thorough coverage is important for good results. Often it is difficult to reach every scale. As a result, some will escape and hatch. The newly-hatched young nymphs are called scale crawlers, which can move around and reinfest the host.

Horticultural oil can be used to manage scale crawlers. Follow label specifications for good results. Avoid treating maples—beech, hickory and dwarf Alberta spruce. These plants are sensitive to oil spray and may experience phytotoxicity, particularly when stressed. Oil can also remove the bluish color of the blue spruce. It may take a few months to get the color back.

Balakrishna Rao is Manager of Technical Resources for the Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

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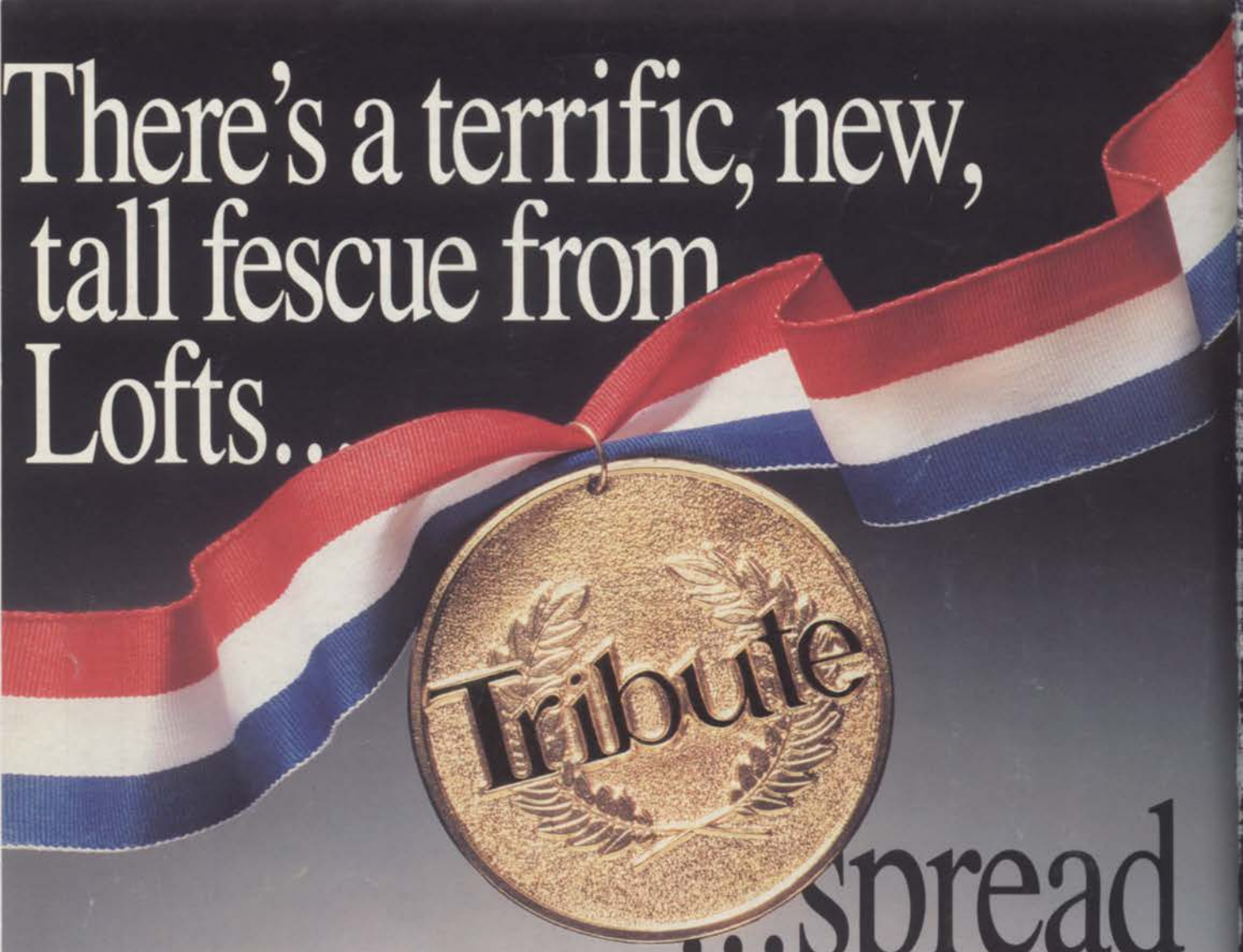

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